RECORD

F.R. Fosberg

[illegible]

Collection and Field Note Book

No. 43

(March 11, 1956 --- April 19, 1956)

(36739 --- 36924)

F. R. Forsberg
Collection Records
No. 43
begin with # 36739
end with # 36924

Standard B&P Blank Books

Standard
Miniature Blank

Pu
Ju
Ceylon
East Indies
Malaya
Male Atoll

PLANTS OF THE MALDIVE ISLANDS

MALE ATOLL

Locality

Occurrence

Date 1956 Alt. m. ( )
Coll. F.R. Fosberg No.

Remarks

Pacific Vegetation Project

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Europe
India
Ceylon
East Indies
Malaya
Male Atoll

Netherlands

March 11 - flight from London to Copenhagen -

Coast of Netherlands in area before reaching former Zuiderzee -

Dunes a very small area with some apparently evergreen vegetation - this very sharply demarcated.
A river with protecting jetties at mouth. A town ~~north~~ east of it. Back of this polders.
Northeast of this a fairly large area of what seems to be salt marshes or tidal marshes with considerable areas of water.
Then vast areas of polders. Water surface in polder areas surprisingly large - canals quite wide.
Soil black. Cultivation drab.
Drainage of Zuiderzee not at all complete. Large areas still under water but also fairly extensive white sandy exposed flats not as yet occupied agriculturally.
Polder pattern - long rectangles oriented roughly perpendicular to coast.

1956 Netherlands

Houses scattered along main cross-canals and dykes also in villages.

Vegetational succession on recently exposed areas in Zuider Zee would be interesting. Varying degrees of darkening of white sand apparent from high altitude.

Eastward from Zuider Zee the polder pattern becomes less and less regular, with blocks of polders at varying angles.

To the east of the polder land, ~~is~~ perhaps, but not certainly, near Emden, Germany, is integrally cultivated land above sea-level.

Clouds then cut off visibility.

Friesian Coast - much low-lying land, completely under cultivation. Plots drab colored & black - those plowed apparently black. Roads separating them are mostly white, some obviously from packed snow but others possibly sand. No snow on fields but much floating ice in coastal waters.

Almost no streams in coastal area but some very small ones and a few conspicuous ones a few miles inland. Some of these appear much larger than they are because of broad meandering strips of bottom land, some of it cultivated, some not, along their courses. Inland the fields are more and more conspicuously outlined by bands of snow, these, for some reason (probably drifting by east winds) around the insides of west boundaries extending but diminishing eastward along north and south boundaries. Shapes of plots becoming more irregular across Jutland south of Flensburg.

band of floe ice along the shore east of the isthmus, quite wide in places. Some days partly frozen over bay between Zealand and small islands west and south of it mostly frozen over. These small island entirely cultivated except for small marsh areas around ponds or lakes. Soil black. Lots irregular. Ice between islands broken into vast slabs of irregular size and shape. Some areas completely shattered. Much ice to south of Zeeland. This generally more broken up than that farther west.

Western part of Zeeland like islands but cultivation pattern becoming more regular eastward. General color drab with shadings of green. Eastern 2/3 of island lightly snow-covered, more so eastward. Soil black where exposed. A few patches of forest here, apparently mostly deciduous, smaller areas of conifers, these

as angular patches within the larger angular patches of deciduous forest. Forests of irregular distribution probably not 2% of total area seen but locally forming a large part of the terrain. Eastward toward south of Copenhagen the proportion of coniferous patches in the forested area increases, locally to perhaps half.

Much ice on east coast of Zeeland. Snow gets lighter again here. Farms here seem to have many small ponds, frozen and snow-covered now, of course. Along the coast an area that may be either lagoon or marsh protected from sea by offshore banks.

Heavy floe-ice southeast of Copenhagen. Between this and shore are concentric bands of a bright green bloom which extend some hundreds of feet out from the shore.

Along the shore at the airport a small patch of Phragmites communis. The airport, off the concrete runways, is covered by a very short grass, drab in color now.

1954 Switzerland

March 1 - Zurich to Rome by -
Neighborhood of Zurich very
pasture with short dead
grass, patches of old flowers,
patches of woods - bare
spots, lands, & mixed
In some of the pasture are
abundant small mounds
of earth very much resembling
those made by pocket gophers.
Around the lake in Zurich
are thousands of gulls -
small almost white with
black heads.
A vast expanse of the
higher Alps entirely
snow-covered, peaks and
valleys, incredibly rugged.
On the Italian side
the snow gives way to
straw-colored higher
slopes and ridges,
darker steep slopes below
with woody vegetation.
Lakes Lugano, Como, Maggiore
quite blue.

Genoa

The Po Valley intensively
cultivated. The Po
meandering through
the flat valley with
a broad sandy bed.
Hills at head of south
tributaries north of
Genoa are a dull
brown in color, not at
all green.
Red rocks coast n. of Fabriano
brownish but showing some
green. Hills between there and
Rome completely snow-covered
15-20 min. n. of Rome.
Very little forest - what there
is shows up black
Approaching closer. The
broad valleys with
meandering rivers each
snow. The hills have it
here near Rome, it completely
disappears.
Landscape south of Rome
near airport is almost treeless
except for a few clipped evergreens
along the roads and some
trees in villages. A few
deciduous trees also along roads
All land cultivated even village.
Cultivated land turning green but
red or reddish. Higher hills to
east, snow-covered.

1956 Italy

Mar. 10 Flight Rome to Athens
Along the coast southward of Rome are several large blocks of forest, some of it evergreen, some deciduous with some admixture of evergreens.

Mar 15 – Flight from Bombay to Colombo

Hills around Bombay and southward dry and brown except for scattered palms and other trees and bushes. Some of them, to the south, seem scrub-covered with bits of thicket and forest in some ravines and valleys.

Lowlands, flat or gently rolling, between the hills seem all under cultivation, marked by hedges in some places, others not, but are all extremely dry. Thin mangroves on mud flats in estuaries.

First half hour south along coast – hills and entire coastal area look very dry and brown but scattered trees, more abundant in ravines, and a few small patches of wood are green. This coastal area does not seem at all thickly populated after vicinity of Bombay is left behind.

Occasional white sandy beaches backed by green

1950 India

vegetation but in most places the brown hills come directly down to the sea, usually ending in low bluffs.

To have north – soil definitely reddish. Seems a rather drowned coastline, judging by number of rather complex estuaries. Stream valleys abruptly cut in ~~too~~ what appears to be an elevated coastal plain. These valleys greener than intervening sections of elevated plain, but not really very green. It seems that herbaceous vegetation is all ~~green~~ brown while woody vegetation is green.

Land forms during next
2 – 2:15 15 minutes very interesting – sharp headlands abruptly interrupting sand beaches. Steep wave-cut bluffs around these headlands and sections of coast lacking beaches. Valleys here apparently have considerable population but elevated plain very little. Light green which could be sugar cane (or rice) at 45 min.

Estuaries become more numerous but mostly with

abrupt sides, relatively little mangrove except for a few bars. Patches
2:5 – of woods on slopes of
2:13 ravines, some ravine well marked by woods.
2:20 Patches of light green – sugar or rice becoming more numerous on flat bottoms of valleys.
2:24 Areas of moving dune sand. Attempts to control them by planting trees. Long sand spits deflecting some river mouths southward. Belts of woody vegetation back of beaches may reflect advance of sandy area toward sea or cutting back of higher land and its replacement by sand.

Curious alternation of ~~sh~~ pointed headlands with beach continues with beaches forming greater part of coastline.

2:30 General coastline rather straight, except for these small pointed headlands and the numerous estuaries.

Sugar patches more numerous.

Patches of woods also becoming more numerous and larger.

Areas back of beaches wooded. Elevated coastal plain lower. Large patches of wood occasional on it.
2:33 otherwise it is still drab a reddish in color.
Goa. - large estuary.
Country generally more wooded here, but fields and open land drab.
Long straight beach some miles long south of Goa. Some loose sand behind it, partially tree or shrub covered. Then another estuary with sugar cane. Then ~~a large~~ here small islands offshore.
2:35 - Country becomes rougher
2:41 and hills more covered. They hills seem wooded with drab fields on more level places.
Many large estuaries.
2:50 Lower country and again more open and brown. Many and complicated estuaries.

2:51-3:0 Coastal plain becomes lower and more naturally eroded. Southward more and more interrupted by low rounded hills which are green with reddish soil showing through. Between the hills and flat fields in between there. Some fields are drab, others low and bright green - rice? Small patches of wood and clumps of trees abundant.
3:03 - The small hills
3:10 become so abundant that they make up most of the country. Their tops are in places brown and red, probably badly grazed. Several winding estuaries between them. Cultivated
3:13 land between the hills becoming divided into small lots separated by hedges or strips of vegetation, at least. This area rather densely populated. Drab color of fields evidently stubble or grass - at least all hills between are red. Soil in these fields, though, may be gray-brown, as suggested by some that seem to be plowed.
3:16 Many fields green, especially near stream courses.

3:15 two large estuaries heading up into meandering sandy beds separated by complex of hilly vegetated red hills with fields green and dry, and patches of wood between them. Extensive offshore banks at mouths of estuaries. A city at mouth of south one of the two.

Then a long almost straight, slightly echelon beach southward for miles, some dark vegetation at top of beach, then narrow strip of green fields. Then back of this the same complex of low rounded reddish hills, here thinly or scarcely vegetated, with fields and patches of woods between. Some small

3:30 estuaries southward, mouth deflected by long sand bars. Deflection southward but actual opening north of southern end of sound in each case. Then one with mouth deflected northward in same manner. This a fairly large one.

3:22 South of this the dissection

becomes extreme and the land back of the coast is largely a rolling red plain cut by fresh ravines. Vegetation very thin, but with wooden low places and along ravines.

3:25 Just south of this a broad sandy coastal strip in front of the slightly elevated plain. Sandy area cultivated with strips of trees and peaks ?? parallel to beach.

Then long stretch of sounds, cut off from sea by long spits or banks. This backed by rather low coastal plain, the wooded in strips parallel to coast rather irregular, cut somewhat by winding estuaries. This ends

3:27 southward in a hook-like hilly headland pointing somewhat southward, with again a long beach south of it in a conspicuous echelon arrangement. Large estuaries and sounds here also, but visibility now very poor. This is probably about Cannanore

1956 India

followed by Tel Aviv and Haifa but plane is too far offshore for good visibility. Here are red hillands and estuaries, with more

3:13 vegetation than northward. As far as can be seen the coast is predominantly wooded from here. Haifa is perhaps the dividing point between a dry and a humid coast.

3:18 Approaching coast again somewhat - visibility low. Landscape again wooded dry but with considerable expanses of green.

3:57 Long straight beaches backed in places by dense vegetation in places by sounds. Back of this coastal strip a hill with, very, areas of green (pine) between them, some woods, some open brown grass or bush.

4:50 Approaching coast again but visibility very poor a grey-blue haze. Evidently long offshore spits and extensive sounds but details not clear.

Apparently this is Gelem (Malta).

inland a low coastal area, partly under water(?) partly cultivated. Inland apparently some open sand partly vegetated. (?) this not clearly visible.

5:17 large densely cultivated coastal plain area considerable vegetation. Large lake inland from this (Vandenad?) and inland from that extensive flat area cut into large angular blocks, some flooded, some brown with scattered green patches separated by broad canals and estuaries. These blocks apparently cultivated, as they are subdivided into rectangular patches.

4:11 Southward another lake apparently divided into fields bounds with a town on an island in it. South of this an intimate mosaic of patches of trees and of cultivation, to east wide green fields (sugar?). Southward this penchment. Coastal plain is trees and cultivated patches.

[illegible]

[illegible] sand and [illegible]
[illegible] 4:15
more abundant as [illegible]
[illegible] patches of trees [illegible]
[illegible] more ground to [illegible]
[illegible] 4:25
[illegible] and [illegible]
[illegible] 4:30
[illegible] and the south south [illegible]
[illegible] becomes
irregular, with [illegible]
[illegible] irregular of something [illegible]
and then a large irregular
lake. 4:37 Then red sand
rolling with [illegible]
strips of flat [illegible]
soil [illegible]
The [illegible] and
roughly regular, the coast
with many patches of
cultivated land

4:50 large estuaries and coastal
lakes, completely separated from
sea by spits or bars - one
opening
Country generally red,
with some vegetation, comp.
for dead open meadows
and [illegible] which are
flat and treeless.

Beach very straight
for miles in places
[illegible] water in places
or what appears to be
reeds or low forest.
5:20 Then a broad sandy
apparently unvegetated and
probably partly cultivated
[illegible] of beach. Back
of this a complex of red
low rolling hills with
meandering flat [illegible]
extending [illegible] and
[illegible] flanks vegetated
with woody plants. The
meanders dead, due to
cultivation
4:56 Then this complex comes
immediately to the coast and
the coast turns very slightly
more eastward, is
predominantly wooded
with red hills showing
through to some extent.
Then another long straight
beach. The same pattern (4:50-4:56)
repeated somewhat, but
with not so much flat
coastal strip, & red hills
closer to coast. Meandering
flat valley bottoms, drift in [illegible]
confluence between them.
4:57 Hills come down to coast again
and another gradual bend eastward.

but real beach is continuous.
The sparse vegetation of the rocky cliffs looks as if over-grazed.

4:13 A town, and patches of more dense wood and open areas back of coast.

4:35 Then a book like headland with a town, again the coast trends west and follows by a long broad straight beach. Back of this marsh, often grassy and seemingly country, some cultivation. The rocky hills zone is obscured.

4:53 A sharp bend eastward followed by an irregular coastline.
To eastward broad low plain with a bed matted dark sports of vegetation as far as visibility goes.

Cliff [illegible] Colombo

In distance a sharp low hook like point followed by another sharp bend and an irregular coast trending northward (I navigate not certain if this is Cape Comorin or not.)

Mar 15 - Colombo area almost solidly planted to coconuts. Planting rows in regularity from field. A patch here and fields also. Some other trees mixed with coconuts. A few patches of woods without coconuts. Rice in various stages - some has been harvested.
Pandanus and Acrostichum on low wet ground near airport.

March 16 - Colombo
Rocks at Mt. Lavinia hotel covered by a short growth of algae - Ulva.
Crows abundant, dark gray.
Cultivated plants seen in Colombo:
a Cocos nucifera
c Peonia grandis var. alba.
o Delonix regia
o Erythrina variegata var. orientalis
~~o Ficus [illegible]~~
~~o Dracaena [illegible]~~
o Cassia fistula
c Plumeria rubra
c Plumeria sp. "Singapore"
c Casuarina equisetifolia
c Artocarpus altilis
o Samanea saman

~~[illegible]~~
[illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible]
~~[illegible]~~
~~[illegible]~~
c Thespesia populnea
c Pseuderanthemum carruthersii
o Bougainvillea glabra
c Bougainvillea spectabilis
c Cuscuta japonica
c Hemigraphis repens
o Ipomoea carnea
c Polygonum pulchrum
o Quisqualis indica
c Fibraurea [illegible]
c Malvaceae [illegible]
c Thespesia populnea [illegible]
c Tabernaemontana [illegible]
o Strychnos nux-vomica
c Rubus discolor
c Cycas circinalis
o Cycas revoluta
o Caesalpinia pulcherrima
c Acalypha amentacea var. villosa
c Agave sp.
o Canna [illegible]
o Ficus religiosa
o Nerium oleander
o Thevetia peruviana
c Cassia [illegible]
o Euphorbia pulcherrima
c Ipomoea [illegible]

c Polyscias [illegible]
c Allamanda cathartica [illegible]
c Dieffenbachia [illegible]
c Coleus [illegible]
o Euphorbia 'splendens'
c Calathea [illegible]
c Mussaenda [illegible]
c Catharanthus roseus
c Polyscias [illegible]
o Pseuderanthemum carruthersii var. atropurpureum
o Adiantum sp.
o Nephrolepis sp.
c Thunbergia erecta
o Ixora coccinea
c Ixora alba
o Manihot esculenta
c Bougainvillea [illegible]
o Tamarindus indica
c Cymbidium sp.
c Barringtonia asiatica
c Agave sp.
c Lantana camara
c Vectoria grandis
o Terminalia catappa
c Artocarpus integer
c Strobilanthes ? [illegible]
c Pavonia grandiflora [illegible]

1956 Ceylon

Colombo is, in general very well covered by trees. Most of it is, except the down-town or 'Fort' area and the actual water-front and railway yards and market area looks green and wooded from the air.

Jan. 2 Ceylon

Mag. [illegible] from
[illegible] sandy

First country outside
Colombo - open low pastures,
some cultivated plots, some
1-2 dm above water table
Ponds with a small floating fern
and hibiscus flowers.
Some sites and small
villages with coconut
trees and other palms, mango,
breadfruit, jak, various other trees.
Extensive marshes with
open water completely covered
by an unidentified floating
plant - round, green, patches
of crimson. Cyperus. Typhram
Cricket, watt. Cassia.
Phoenix sp. Cananga odora.
Lantana camara.

Salvinia

15 m

Rice fields in various stages
& little Colocasia along edges.
Ragama sta.
Areca common. Rice fields.
Coconut groves
Large rubber plantation.
Low rolling hills.

photos looking east

Batuwatta sta.
Coconut and min. cult.
trees on hilly ground, rice
patches on flat low ground.

Kanemulla sta
Rice fields, rolling valleys
with rice patches. Bright
green. Much very low
rolling hilly country with
houses, small patches of
rubber, coconuts, tea.
Gracaudum. Mango. Murra
koenigii grandiflora.

Gampaha sta.
Caladas grazing in
rice stubble fields, cattle also.
Rice has all been cut.
Breadfruit occasional.
Rubber and coconuts occupy
higher land almost equally
Proportion of high ground
and rice about equal.
& little bamboo.
Pandanus (?) along watercourse.
Gliricidia common.
& large Caryota (urens ?).

Kelaniwala sta.
country essentially unchanged,
more coconuts, less rubber
perhaps, more rice.
28 m (!) First real
hills 50 m. a rise high, abrupt,
covered, except cliffs, by
woods, thickets and coconut
cultivation - smaller
coconuts and bananas.
Some clearing and burning.

photos looking east

1912 Ceylon

[illegible] plantation [illegible] feet

Minigama Sta.
Country mountainous, flat again, [illegible] hills in distance
Small patches of pineapples.
Much tangled second growth on hills. Rocks exposure common. Some forest. Coconuts on lower hills. Most rice in coconuts here without undergrowth, cattle grazing.

Ambepussa Sta.
Settlement in rubber.
Brown [illegible] with [illegible] walls thatched with crown leaves. Undrained.
Land higher, hills [illegible]
Little rice, most [illegible]
Maha River

Bogoramma Sta.
Higher hills, forest in [illegible] cleared slope

Alawwa Sta.
Country more hilly
Forest not [illegible]
Mostly coconuts, some rubber
A little rice in flat bottoms

Polgahawela Sta.
Fine view of real mountains in distance.
More rice, all stubble but flooded. Higher ground also in coconut plantations. Steep mountains in distance on left wooded. Pawpaw ~~common~~ abundant around dwellings. Papaya common, breadfruit occasional.
High hills, forested, top, cleared and second growth. Thicker on slopes. Mainly rolling low hills with coconuts.
Still along Maha River.
Some rubber plantation again, not very large.
Areca common.
Bamboo still occasional, 2 or 3 kinds.
Same pattern of coconuts on rolling land, rice in flat bottoms, in patches bounded by levees.
Very good view of mountains in distance in night, very rugged.
Rambukkana Sta.
Xanthosoma and Colocasia.
Rice all stubble.
Areca abundant.

1952 Ceylon

Entes mountains.
Slopes with mixed secondary forest and coconut groves. Artocarpus common, at least 2 spp.
Areca still very common, pore also bamboos. Terraced rice in small valleys.
First patch of Imperata
Ceiba pentandra in small patches.
Jatropha curcas hedges
Some rubber, native young trees.
Mountains in places very abrupt other, more gently sloping, covered by second-growth forest but with clearings and slifting cultivation even on steepest slopes and clear to tops. A few small areas of grass on some slopes.
Coconuts still very common, but rotten highest places or steepest slopes. Breadfruit common also.
Alocasia in wet spots.

5/7 Scenery magnificent. Spectacular rice terraces.

Imperata rather common

Alagalla Kta
Magnificent rice terraces here, compare very favorably with Pinto. Valleys are held by a thin ~~to~~ rod.
Tamada occasional.
Pithonia diversifolia well established along railroad.
Some rubber on even rather steep slopes.
5/11 mi. A giant bamboo here, rat. Samanea.

Balana Kta
Mostly second growth with scattered small patches and clumps of bamboo. Rubber on less steep land.
Rubber trees rather sparsely leafy at this season.
Still plenty of coconuts. Citrus breadfruit mango.
Bare gray rock cliffs. Some epiphytes in trees. Slopes rocky. Much Imperata on soil-covered slopes. Gullies rounded suddenly common.
~~suddenly~~ on tea shade.
~~—~~ tea plantations also appear here. ~~Kadugo~~

1950 [illegible]

Radagama, a lot of rice harvested, now almost ready.
Level valley between steep mountains. Slopes in tea. Bananas abundant coconuts less so.
Jackfruit patches.
Bamboo common, also the breadfruit. Gliricidia.
Railroad goes downgrade from here.
Small herons common here flying at random.
Coconut palms common locally.

Where slopes are too steep for rice terraces tea is planted. Clean cultivation of tea seems to encourage erosion. Soil is red.
Streams are quickly least by rapids.
Peradeniya junction.

May 7
Udawattakele forest
very hard - walking difficult

Forest of Artocarpus nobilis, Artocarpus macrophyllus, Pterospermum diversifolium, Hevea brasiliensis, Artocarpus integer, Landeria indica, Myristica dactyloides, Macaranga peltata, Mycoporum [illegible]
Covered by lianas and epiphytes and another, and on ground as well as intertwining.

Regeneration of Lithocarpus is very frequent
Seems to flowering in 35-40 years

Calamus [illegible]

Macaranga and Trema are pioneer colonists in openings in Ceylon - [illegible]

Great numbers of fruit bats - eaten by some and relished [illegible] for breakfast
Small groups of crown monkeys. Fruit bats [illegible] and [illegible] when roost. Artocarpus [illegible] Trees.
Hydnocarpus [illegible] - always affected by rot.

[illegible] and [illegible] [illegible]

Pterocarpus petalo gallicus
Lilies on ground. Odor
spicy. Like Acacia farnesiana.
(Cycle - trees leaves. New
produces new leaves and
flowers. covers ground with
petals for a couple of weeks
then gives way to fruit
then one of wife fruit ?
Trunk blotted or stalks.
Neolitsea cassiaefolia
Canthium dicoccum
Lagerea grandis
Elaeocarpus serratus
Pterospermum canescens
Mangifera indica
Ficus hispida (opp. level)
Wendlandia notoniana (in clear)
Acronychia laurifolia (understory)
Mallotus (very often)
Garcinia gamboeana (under stony)
Arenga ursina
(used for palm sugar, toddy, and
Ferns
Blechnum
Angiopteris
Polypodium
Polypodium ?

Lendrocalamus gigantea

[illegible] is a mixed
primary secondary forest
[illegible] 1 [illegible] 2 [illegible] 3 [illegible] 4 [illegible]
or more [illegible]. The canopy is
irregular and not complete.
Although the principal
trees are mostly species of
mahogany, forest is very
open and irregular
[illegible] mostly large
principally saplings
and seedlings of most
of the trees ~~[illegible]~~
especially of Mahogany.
[illegible] that this
species is becoming
more and more abundant
in the wet evergreen forest
and will probably
dominate this type all over
Ceylon within 15 years.

Artocarpus nobilis is
one of the common trees. The
leaves of mature trees are
entire or very slightly
lobed, stiff, crusted.
Seedlings and young trees
have deeply lobed leaves
resembling those of Artocarpus
altilis.

1956 Ceylon

Nan 1 – Wet Kandy and Kurunegala

Rubber plantations, some of which show an undergrowth of Theobroma. Tea plantation in Kandy area are mostly in very poor shape or abandoned – given over to rubber or to general mixed cultivation of coconuts, breadfruit, jak, areca, mango, banana, Ceiba, Theobroma.

Xylopia parvifolia with white trunks seems almost dominant in the evergreen forest lowland type on steep upper slopes of mountains above Kurunegala.

Just above Kurunegala on flat land and extending to Chilaw – Naganbo the major crop is coconut. Still some rubber and rice. Under coconut trees a thin sod of Aconopus compressus used for grazing and serves to reduce erosion.

Bamboo a common shade tree

Bada jaminum sambac [illegible] north road to Peninsula

Artocarpus integer plantations mixed with many other trees, also Vitex plantations. Lucifera used as nurse crop, but has in many places choked out the jak tree. Plantations date from last 20's and early 30's. Land taken out of shifting cultivation. Chena – trees up to 3 dm diam to 15 m tall, extremely variable in bol yellowish brown gritty. Shrub layer very sparse, of Melicus, [illegible] mordanica etc. Homeranjus, Senna, saplings. Ground layer almost absent, small grasses, seedlings etc. but ground covered by leaves. Where jak and Vitex planted together Vitex will suppress jak. Lucifera also outgrows both Vitex and jak.

pedogon seedling and shoots

At this season Vitex and Lucifera are both almost leafless, so the thin undergrowth looks odd, but the rest of the year the canopy is almost complete

Moist area

1950 Ceylon

In the wooded stands
- teak, teak plots, and plantations
with mahogany, the
latter larger, more dense
and not very well differentiated
for some chlorophora, swietenia
gamecarpus, shorea (local name
from syed ...)
Swietenia has equalled
or overtopped the other trees
even though planted later.
Reproduces well.
Chlorophora seedlings appear
in dry season due back to
ground in wet season, repeats
this many times, till an
opening appears, then it
grows rapidly to a large size.

Another stand of
mixed indigenous species
unsuccessful when
canopy was left intact.
When opened to half
more success. stands 1936
Here, with Filicium, Canarium
zeylanicum, Calophyllum
tomentosum, Artocarpus
nobilis, Shaorang pelata
Nephelium, Mesua ferrea
The large trees remaining
are 30-40 m. tall, trees was
cut, planted layer was
10-15 m and the ele[illegible]

undergrowth, not
sharply distinct from it

understand where gap
was planted close together,
not thinned for a long time
then thinned. The sudden
opening led to dying
back of the remaining trees
and entry of many seedlings
trees - Shaorang pelata, a
small-leaved Ficus
forming the ground cover.
The forest now very thin
[illegible] planted [illegible]

A stand of planted mixed
species without any canopy
they left - is a bit thinner
and lower than the planted
layer in the stand under a
canopy. Trees more
slender and more
spaced, leafy, but
closer together, leaning,
very crowded but strong.

Charavia tubiflora planted
in open is semi-parasitic attached
by haustoria
in shade not

This is all in Holmes Day farm
of Wet evergreen. "would call moist.

Ceylon

Scattered [illegible]
[illegible] 2 in.
Flowering [illegible] not
decorative [illegible]
Neck [illegible]
Intocarpus lepiota
small scaled, [illegible]
native to Ceylon
Sometimes [illegible] in Ceylon
is a very small [illegible], the
form imported [illegible]
Ficus in [illegible]
[illegible]
[illegible]
planted here

In some trees, especially
if a branch [illegible]
the wood may be attacked
by termites greatly [illegible]
the centuries the tree
~~[illegible]~~ shows a heart
rot with enormous
an [illegible] maggot
live. From large [illegible]
stalks in trees.

Cananum zeylanicum
is losing its leaves now
As [illegible] [illegible]
with large [illegible]

vites [illegible] needs
for first year, then if
shade not removed
will die out. Naturally
some [illegible] shade
has provided to shade
can grow in [illegible] but the
is very branched.

Wood of Celtis cinnamomea
has very good color. Often
natives [illegible] among [illegible]
each other. They [illegible]
piece of the wood in
the well, rendering water
undrinkable.

Strychnos nux-vomica
occasional - bark very
bitter. ~~[illegible]~~ taste persisting
in mouth.

This forest generally has
[illegible] exact
thin moss and certain
lichens. Lianas and
creepers adherent to
trunks, on other hand,
abundant.

[illegible] Kandalgama
[illegible]
[illegible]
[illegible]
Wet evergreen forest
[illegible] not [illegible] logged [illegible] very dense
undergrowth [illegible] below
abundant seedlings
[illegible] specimens
On the side of road most
of the trees are mostly [illegible]
about 20 m. to 1 Undergrowth not well differentiated
into layers but very
abundant at [illegible] levels
On other side [illegible]
native forest but very
degraded, with secondary
species, as Macaranga
peltata, [illegible]
etc. growing side-by-side
with Diplocarpus zeylanica

A dense patch not
logged recently. Trees
to 20-25 m. canopy very
irregular but heavily
covered by lianas
Layering not clear

[illegible] Nov 1938 [illegible]
[illegible] they [illegible]
[illegible] removed
[illegible] secondary
forest with very dense
stand from saplings
1-2 m. to small trees
7-15 m. and 1.5-2 dm. d.b.h.
no distinct canopy
practically no ground
layer but abundant
layer esp. Artocarpus
nobilis. [illegible] percentage
of economic species [illegible] removed.
because other were cut out.
Artocarpus nobilis
Schizophylum rostrophium
Vitex pinnata
Chaetocalyx castanocarpus
Dillenia retusa
Mangifera zeylanica

Control plot has
trees to 40 m. or more
3 strys - incomplete
canopy 30-40 m.
second layer about 20 m.
shrub layer 2-4 m.
This latter rather dense
but one can walk
freely between the
slender saplings.
no ground layer at all.

[illegible]

[illegible] from [illegible]
base of [illegible]
[illegible] of [illegible]
[illegible] suppressed [illegible]
base of [illegible]
tend to have some
[illegible] seasonal [illegible]
suppressed, increased
when [illegible]
Antocardia, [illegible]
Cryptocoryne, Nephelium
Ostodes, Mangifera

Epiphytes very best
Asplenium nidus, based
[illegible] ~~Tiphylla~~ [illegible]
in interior of forest,
[illegible] [illegible]
[illegible] long straight [illegible]
trees, [illegible]
prominent [illegible]

foul brown - [illegible]
gravel [illegible]

large trees [illegible]
[illegible] repeat [illegible]
canopy is good

[illegible] completely
selected by [illegible]
[illegible], perfectly [illegible]

March 1-24 - Kandy
Among the most
conspicuous features
of the landscape are
large numbers of crows.
These perform the function
of scavengers and seem
to take the place of the
vultures of tropical America.
They are very noisy and
very aggressive, and abounds
around buildings and
habitations, seem very
well adapted to a com-
mensal existence with
man.
Deraniyagala says
that in Ceylon the vultures
abound in the north and
are abruptly replaced
southward
by crows.
There are two species,
a completely black one
commonest at Kandy
and a partially gray
one noticed with the
black one at Colombo.

1956 Ceylon

March 25 - Kanakaniyamulla Forest Reserve, half way between Panadura and Kalutara

30/39	1	Psychotria occasional in secondary thicket.	shrub 1.5 m. tall flowers white, odorless
	40	Phyllanthus edge of secondary thicket	shrub, 5 m. tall, ~~[illegible]~~ monoecious flowers pendent, fruits held erect from distichously arranged branches
	41	Boerhavia SPERMACOCE ASSURGENS R. Ilson weed in clearing	plant purplish, green flowers white

March 26 - Badagamuwa Forest Reserve, 3 miles north of Kurunegala

	42	Combretum grandiflorum edge of forest along road	liana hanging from tree.
	43	Eucalyptus edge of thicket	sparsely branched shrub 1.5 m. tall, flowers white. fruit blue.
	44	Ixora thicket	shrub, flowers white.
	45	Ixora secondary thicket	shrub 1 m. tall, flowers vermillion.
	46	Ixora secondary thicket	shrub, flowers vermillion.

1956 Ceylon

March 20 Rail trip from Negombo to Colombo

The lowland east of Colombo may be described as a rolling with areas of very slightly elevated usually rolling land laterite in nature, covered by coconuts, rubber, and general cultivation alternating with low flat marshy areas largely devoted to rice cultivation though left fallow for a short time. Less fallow patches are covered by weeds of various sorts the aspect depending on how long they have been uncultivated, how wet they are, how extensively they are grazed by water buffalo etc

Areas with standing water are likely to be covered by Salvinia Nymphaea etc

Heavily grazed areas tend to be grassy. Other areas have a mixed weedy flora

1956 Cooper

March [illegible]

[illegible] Passiflora grandis
planted in [illegible] pot

12 Passiflora grandis [illegible]
planted in [illegible] pot
[illegible]

rounded [illegible]
all leaves green, from
[illegible]
rounded [illegible]
[illegible] upper [illegible]
[illegible] green, [illegible]
and to [illegible] [illegible]
flowers [illegible]

1956 Ceylon

Mar 27 - rail trip from Colombo to Galle

South of Colombo the coast is lined with a belt of coconut plantation. The trees grow on sandy colluvial flats, with either no ground vegetation or a very thin grass. Where there is a gap in the coconut groves or a wide place in the flat between the coconuts and beach there is usually a bushy ground cover of bluish green spinifex grass, and often a clump of Pandanus. This does not have exactly the same habit as P. tectorius and the spines on its leaves seem shorter, stiffer. There are also low clumps of Clerodendrum inerme [illegible] and matted [illegible]

Near Panadure there are clumps of [illegible] Spinifex and flats of close cropped pale grass. Scaevola is a noticeable component of the herb vegetation, also Calotropis. This is true also inland in the coconut plantation, where also Tribulus terrestris and Oldenlandia occur.

folia is become important. The greater the distance inland the more species of trees and shrubs are found, especially around the numerous dwellings.

Just north of Kalutara is a lagoon or estuary with marshes and swamps along its margin that show a considerable diversity of vegetation. [illegible]

South of Kalutara the top of the head is lined with large Calophyllum, Terminalia, and other trees and here the undergrowth in the coconut groves tends to be very luxuriant. The grass here also, is much taller and darker.

Along estuaries a shrubby growth in which Agalocha is evident with scattered red leaved Pandanus various mangrove species, Clerodendrum, Acrostichum, etc. In low lying coconut land are channels apparently for drainage, also manuring, along which Colocasia, Acrostichum and

1950 Ceylon

are conspicuous.
Southward toward
Chilaw - Puttalam the
subdominant vegetation
in the coconut groves
becomes much more
important. Patches of
estuarine swamp, and
even a few rice patches
alternate with much
larger areas of coconuts.
Houses are scattered thru
this area as in most
of the land from Colombo
southward. Breadfruit
trees are common, also
some mangos. Alocasia
and Xanthosoma notices
here as well as Colocasia.

South of here the groves
are more open and grassy,
at least close to the beach.
Obviously heavily grazed.
Dwarfed Pandanus very
common. Here the flat
low coastal land is
interrupted by low
rounded rock masses
here and there.
Southward several
hundred yards back of
beach, are rather extensive
rice fields. Cinnamon is

becomes an important
element, at least locally,
in the vegetation just
back of the beach.
Just before Negombo
a large estuary lined
with a narrow belt
of possibly swamp forest.
South of this breadfruit
and other trees become
abundant again in
the coconut groves, Cabra
conspicuous with its
white flowers. Mangos
common. Some openings
either in garden cultivation
or filled with bushes
and low thickets, or marshy.
Standing water common
in coconut groves. Large
expanses of Acrostichum
marsh and thin scrubby
mangrove swamp.
Occasional knolls to
4-6 m. high of deeply
weathered, apparently
lateritic material.
Area around Ambalangoda
some distance back from
beach very luxuriant
in appearance. Much
taro in wet spots, also
Alocasia.
South of here just

99 - Ceylon

or Nosal

Beach of beach ridges is being dug up and burned in kilns to make ~~lime~~ ponds result.

There an extensive area of sequestered swamp south of Elephant Pass near Pelaane

ground back of beach ridge across from in coconut grove and irregular pools of water - presumably setting fish. Salvinia locally abundant in there.

Nymphoides abundant locally.

Southward the ground between the coconut trees seems to be systematically excavated according to a rectangular pattern of either narrow or broad ditches. These either filled with water or decomposing vegetable matter.

Near Pilaly Lewis are numerous tanks fed in low places in coconut grove.

Southward more small pits for lime.

Agave americana has been seen locally at a

number of places at the west down.

Goats and cattle are common but not abundant. The grass grazed is a tiny and in many places.

Ane even more common southward into

Before ~~[illegible]~~ Vitex becomes abundant in vegetation at top of beach, apparently the unifoliolate form of V. trifolia. Pandanus and Thespesia conspicuous, forming small thickets. Calotropis also abundant.

Well back of beach Breadfruit, Odnoria and taro abundant in coconut grove. Some mangrove along estuary north of Pintola, but very narrow.

Then some knolls of laterite, locally rather extensive, esp. around Richmond Hill and southward. Covered by coconut, mango, breadfruit, etc.

Living fences of Ficus tinctoria and glinicidia sepium north of Galle.

156 Ceylon

March 29 - Kottawa

Destruction of Ceylon Forest for
2 miles from Path of Matara
is described - an forest
the large trees are
excellent and photographed
would have been kept
since 1907.
The area is now cleared
with only small farms
and villages.

The canopy seems
quite irregular not
complete. A layer of
small pole trees and
shrubs is in
fairly general called
shrub layer.

The layer averages
125 ft. It has fewer species
than the lower layer.
Has relatively few epiphytes
but certain individual trees
seem to have a few abundance
of them - Dendrobium, orchids etc
on trunks. Mosses and
lichens on trunks fairly
general. Epiphytes in
branches are not at all
conspicuous.

Canopy seems to be
about 60% but [illegible]

[illegible]
this season has been
unusual [illegible]
[illegible] many
species which have not
flowered for years [illegible]
[illegible] in flower.

The average height of the
shrub layer is 15 ft.
The individual trees smaller
than on lower slopes.
Average tree is 1-2 dm.
diameter, though some
individuals much larger.

Lianas not conspicuous.

Randia gardneri is a
medium sized tree, common
on ridges.

Ground disturbed by
wild pigs. Monkeys
seen in trees.

Gleichenia is an opening
from landslide or fire

1954 Ceylon

Soil on ridge top
a layer about 5 cm. of
yellow-brown mixture
of clay and sand, becoming
slightly more gritty and
with small iron grains
towards 15 - 20 cm. in
compact but not consolidated
reddish-yellow layer.
This layer has roots
and large concretions.
Not wet, and stickier than
Downward this becomes
quite gravelly with
the red-brown concretions.
When cleared this zone
is seen to form a hard
crust very rapidly.
Depth of soil 3 m. or more,
changing gradually
to laterite.
Rooting of trees in the
soil relatively shallow
about 1 m. or so, from
observations by foresters
on windfalls, cuts etc
No darkened surface
layer at all. A layer
of loose leaves and litter
several cm. deep but
transition very abrupt from
intact leaves to more or less
the partially decomposed
as less than 1 cm.

On ridge top, walking
is easier, undergrowth
but relatively few
young saplings.
Small colony of stoted
of a dwarf pandanus
with stems not more
than m. high but leaves
2 3 m. (or even) long

In raising the under
layer is much thicker
and of larger saplings.
The scattered big trees are
bigger. Ferns not
common, with a slender
tree fern with slightly
prickly stipes is conspicuous
Pectaria and several
other genera noted
belong occasional
some Rhaphidophora and
one or two other aroids.
Climbers more common
here incl. Freycinetia.
Conspicuous mosses and
lichens, more developed.
Ground layer on slopes
present but very sparse
and discontinuous.
Spacing of big trees
irregular 2 - 20 m.
Canopy almost complete.
Second story sparse and irregular.

1956 Taylor

Soil on 25° slope
1 m. above stream in
pasture - sometimes submerged
during heavy rain
surface litter of
dead leaves & grass
but most leaves fairly
intact - few in advanced
stages. No harmness
layer. about 1 cm. in
silty sand yellowish
gray-brown, friable even
when moist

Then 3 cm of a more
yellow brown very plastic
clay with some coarse
quartz grit and much
biotite in irregularly
scattered fairly large
pieces

Below about 3 dm the
color becomes lighter and
a mottling due to increased
inclusion of biotite and
(probably) pseudomorphs of to
1-2 a more con. of an incompletely
weathered very light fel spar
giving a pale yellow cast
The yellow-brown clay
matrix is very plastic
A very few soft dark red brown
iron concretions esp. in top
layer, but not conspicuous.

The layer of dead
leaves on the ground is
infested with lice
in great numbers. These
are reddish tan or
black and when extended
maybe as much as two
inches long. They crawl
up on one's boots and
will attach themselves
even through a heavy
woolen sock, starting
to suck blood almost
immediately. If lice
pulled off even before
well attached blood will
run from the wound. We
left well distended lice
detached themselves.

1956 Ceylon

List of trees in Kottawa Arboretum
from Forest Dept. records - list submitted
by Rosayro

Artocarpus nobilis Thw.
Lasianthera apicalis Thw. (Olac.)
Myristica dactyloides Gaertn.
Aniosphyllaea zeylanica (Rhiz.)
Chaetocarpus castanocarpus Thw. (Euph.)
Dipterocarpus hispidus Thw.
Mangifera zeylanica Hook.
Campnosperma zeylanica Thw.
Doona ovalifolia Thw. (Dipt.)
Dipterocarpus zeylanicus Thw.
Kayea zeylanica Gtn. (Clusi.)
Dillenia retusa Thunb.
~~Myr~~ Horsfieldia iryaa
Chrysophyllum roxburghii G. Don.
Wormia triquetra Rottb.
Palaquium rubiginosum Engl.
Hydnocarpus octandra Thw.
Palaquium petiolare Engl.
Mesua thwaitesii Pl. & Tr. (Gutt.)
Hymenocoos cuneata Thw.
Calophyllum spectabile Willd.
Vitex pinnata W. (V. altissima W.F.)
Aporosa latifolia Thw. (Euph.)
Mastixia thwaitesii (Cornus)
Garcinia ternophylla Thw.
and var. acuminata
Isonandra lanceolata Thw. (Sap.)
Syzygium jambosella Thw.
Memecylon rostratum (Mel.)
"Kirilaliya" (Dipt.) unident.
Palaquium parvifolium

Symplocos coronata Thw.
Eugenia grandis
Kokoona zeylanica Thw. (Celast.)
Cerasydia laurifolia (Rut.)
Gymnopetalum walla Gaertn. (Thyms.)
Elaeocarpus subvillosus Arn.
Cryptophyllum ellipticum (Rub.)
Eugenia sylvestris Moon.
Cryptocarya wightiana Thw.
Canarium zeylanicum Bl.
Myristica iryaa Gaertn. (= Horsfiel. I.)
Calophyllum bracteatum Thw.
Polyalthia acuminata Thw.
Semecarpus subpeltata Thw.
Garcinia echinocarpa Thw.
Semecarpus parvifolia Thw.
Sumaptea scabrinervis Trim. (Ver.)
Carallia calycina Benth.
Actinodaphne stenophylla Thw.
Litsea gardneri Thw.
Dipterocarpus glandulosus Thw.
Carallia integerrima DC. (Rhiz.)
Macaranga digyna Muell.
"Kudu waa ? dala" unident. Rut.
"Kaha badulla" unident.
Randia gardneri
Garcinia cambogia Desr.
Agrostistachys hookeri Benth. (Euph.)
Bridelia retusa Spr. (Euph.)
Canthium didymum Gaertn. (C. dicoccum Moon.)
Xylopia championi Hook f. & T. (Anona)

Phenological observations
being kept up by local officer.

1956 Ceylon

~~Kett~~ Mardis? - Kottawa
Arboretum, near Galle

2 49 Osbeckia
edge of rain forest

x 50 Melastoma
cleared roadside edge of rain forest

1 51 Artocarpus nobilis Thw.
common in rain-forest

1 52 Dipterocarpus zeylanicus Thw.
common in rain-forest

1 53 Dipterocarpus lævifolius Thw.
~~[illegible]~~ common in rainforest

1 54 Warmia liquetra Roth.
occasional in rain-forest

1 55 Acronychia:
rare on rocky side in
rain forest

1 56 Terminalia:
rare in rainforest

2 57 Pleurosma linearis Blum. (?Cl.)
common in openings in
rain forest on steep slope

1 58 sub.
rare in undergrowth in
rain forest

2 59 sub. Hedyotis incarnata Thw.
occasional in moist gorge
in rain forest

2 60 sub.
rare in undergrowth in rain forest.

x 61 Hedyotis Fruticosa L.
common in weedy land on slopes.

shrub 1 m. tall, branches
branched glabrous non-[illegible]
erect shrub 1 m. tall
flowers over fruits.
large tree, 4 cm. pricked
up from ground
enormous tree dry leaves
pricked up from ground
enormous tree
leaves pricked up from ground
stalk from ground and
are secured by matter
from about of large tree
leaves dark green above
purplish beneath. Rich
inflorescence and flowers
bright pink.
small quick growing
tree, bark white
Terminalia [illegible]

shrub [illegible]
[illegible]
[illegible]

shrub 1 m. tall, leaves
fruits, has lots of flowers
white. 'Kahurawaniya'
shrub 1 m. tall; inflorescence
pale green, in bud only
erect shrub ~~[illegible]~~ m. tall;
flowers white.

1950 Ceylon

March 28 – coast between Galle and Pilkadawara – the coastal plain is only a couple of feet above sea level. There has been extensive washdown to lessen erosion by the sea in the form of bars the beach with large boulders of metamorphic rock

7/6762 Cordia Pogionantha dichotoma (Rottb.) Merrillgiaf (Det. C. Nicolson) on sandy area back of beach

3 63 Vitex trifolia
common on sandy areas behind the beach

4 64 Scaevola serrata
common on sea-wall of boulders.

shrub 2.5 m. tall, cauliflorous, flowers white with yellow eye, buds yellow, fruit orange and fleshy with two lateral ~~[illegible]~~ angles when ripe, pendent, spreading, branches horizontal & ascending, usually ending in secondary branches, ~~[illegible]~~ somewhat succulent 1 cm. tall; flowers in axillary fruit white, not fleshy of white walled drupe).

1956 Ceylon

May 24 - Hikkaduwa
1 mi. N. of Galle
sand flat with Ipomoea
pes-caprae fringe at
top of beach, with 2 vines
in the mat of Ipomoea.
Back from the beach
on low tangle of Clerodendrum
inerme that it has very
fleshy leaves. Good
flowering specimens were
not seen.

70 [illegible] Pandanus pedunculatus St John Holotype
very common along top
of beach

[illegible]

1 [illegible]
locally common [illegible]
[illegible]

+ 67 Ipomoea pes-caprae (L.)
common at top of beach of
quartz sand.

2 68 Emilia sonchifolia
common in mat of Ipomoea
pes-caprae at top of beach.

Pandanus along shore
is a small densely
branched slender specie
with spines larger and
more remote than in Pteleum.
The stems are clothed
with dried remains of
leaf bases. The color of
the leaves is bluish green.
The heads are small, more
or less globose, with the
phalanges more or less
truncate apically.

[illegible]

forming bird's nests,
leaves fleshy.

forming thin mats not
over 3-4 cm. deep; leaves
somewhat leathery, with
an angle between blade
and petiole. Flowers deep
rose-purple, closed at
4:30 p.m. when collected.

depressed fleshy glaucous
plants; flowers pinkish
lavender, slightly
exceeding involucre. Voucher for (seed sample J. Fosberg
J.T. Baldwin) for chromosome count

1956 Ceylon

Mar. 7 - Nuwara Eliya

The town is in a rolling flattish valley surrounded by mountains. The forest has been cleared and replaced by grass and groves of exotic trees - Cupressus, Eucalyptus, Acacia, etc., even Cryptomeria. Some of the Cupressus are immense. The cones are too small for C. macrocarpa. The habit is spreading and when old the trunks are fluted irregularly.

? Cupressus torulosa

Waste spots are irregularly covered by Ulex, with scattered Rhododendrons with heavy woody trunks, gnarled and leaning, out of proportion to the size - about 5 m. tall. The capsules are 10 loculed, dehiscing loculicidally, sutures first, then the valves splitting, making 10.

The Acacias are probably A. dealbata and A. melanoxylon. The former is flowering some.

It has been abnormally dry here since October. The last rain was about two weeks ago, when a little bit fell in the evening. Everything is in poor condition and water is scarce.

The slopes east of the town are partly covered by tea plantations, part by a [illegible] scrub. Whether the scrub is a result of burning or of cutting of firewood is not clear but probably the latter. Acacia seems to be cut out of it as soon as it reaches any size.

The scrub averages about 2 m. high [illegible] the hollow [illegible] along the top of the hill. [illegible] plants are [illegible] and [illegible] are found [illegible] lower down.

Rubus [illegible] (?), several shrubby Compositae, ~~a prickly rutaceous~~ ? Toddalia, [illegible] and a stiff [illegible] shrub with opposite leaves and [illegible] rather green. Upward [illegible] Rhododendron, Rhodomyrtus and a number of other shrubs such as several Melastomaceae and a Clematis-like climbing bamboo become more prominent upward, also a Solanaceae with winged calyx.

Scattered in the scrub spots are emergent small trees.

1929 Aug [illegible]

[illegible] [illegible] of [illegible] and twisted, mostly [illegible] not [illegible] [illegible] [illegible] and [illegible] (almost mature [illegible]

On the ridge [illegible] the [illegible] [illegible]. I saw one [illegible] at [illegible] in [illegible] places almost [illegible] [illegible] [illegible]. The [illegible] [illegible] almost [illegible] on the slopes [illegible] [illegible] [illegible] dense [illegible] [illegible] along [illegible] [illegible] [illegible] [illegible].

The [illegible] [illegible] mixed with it. It has the [illegible] of a plant that [illegible] [illegible] in its pure even stands, but no evidence of fire. [illegible] [illegible] are dry [illegible] at present [illegible] would [illegible] a definite possibility, but this is unusual. There are not many ferns, though, and few epiphytes or creepers.

This scrub, as well as that on the slopes, is so dense as to be impracticable to walk through without a machete.

Scattered in the ridge scrub are small patches of small trees with the habit of Metrosideros. [illegible] species actually looks like Metrosideros but is sterile at this season. A number

of [illegible] [illegible] [illegible] [illegible]. These trees are from 4 to 8 m. tall. I found [illegible] on the ridge [illegible] trees, [illegible] not in patches but scattered as emergents in the scrub. [illegible] [illegible] a [illegible] of the climbing bamboo, small patches generally scattered the ridge of [illegible].

Wild pigs have been digging in various places. The soil is rather yellow-brown clay.

Where the ridge has a broad flat top there is a tea plantation with no shade. On the south [illegible] of the ridge all except the [illegible] are covered by tea plantation, partly unshaded, partly with sparsely scattered Grevillea robusta trees.

The soil in the tea plantation is but very loose [illegible] [illegible]. It is almost yellow [illegible] colored on the top and [illegible] slopes, becoming [illegible] more reddish on the gentle slopes below. [illegible] [illegible] and clay like both places.

Pteridium aquilinum seems to be a bad weed in the plantation, at least quantities of rhizomes have been dug out.

1956 Ceylon

Mar 30 [illegible] Nuwara Eliya, [illegible] sand and pebbles [illegible] on ridge top

67 ~~[illegible]~~ [illegible] very [illegible] & decorated [illegible] fruit

2 70 Psychotria
common in patches of scrub forest

1 71 Vietrosideros!
common in patches of scrub forest

1 72
dominant in tall scrub

2 73 Pittosporum
occasional in patches of scrub forest

1 74 Hedyotis confertiflora (Hk.f.) Alston
occasional in edge of scrub.

~~[illegible]~~ Mar. 30 Upper Nanu Oya river just below Nuwara Eliya, center of island.
Montane rain forest, rather degraded.

2 75
2 many 76
2 77
2 78
2 79
2 80
2 many 81
2 82
2 83

Scipena flexilora d. del. S. Kayama, 1925

gnarled tree 8 m. tall; stipules those of Strasseria; flowers greenish, tube very short.

tree with rounded bunchy tips to limbs; sterile.

erect shrub with stilt roots; leaves tending to be pinnatifid when young; without pronounced odor; sterile.

tree 6 m. tall; fruit immature.

erect shrub 1.5 m. tall, leaves deeply sulcate.

on great ~~rocks~~ boulders of metamorphic rock along stream.

epiphytic on trees in rain forest

1956 Ceylon

		Epi.
3678a		Ephemeranis tenuifolia ?
3		on vertical road cuts in hard clay
1	35	Lycopodium on overhanging rock just above stream
1	36	Psychotria rare in edge of second growth
2	37	Hedyotis Trimenii Deb & Dutta in roadside bank
1	38	weedy roadside

The Pamunya ravine and the mountain above it are covered by a mixed mahogany-forest with many species represented mostly individuals over 1 foot [illegible] The last four species were noted.

The slope is low, 5 m.±, on exposed ridges, 10 m.± on other slopes, and 15 m.± in ravines.

Mosses and vascular epiphytes, as well as parasitic hardwoods, are common on trunks and main branches of many of the trees, but not so on smaller branches or leaves except in ravines

tufts; fronds ~~[illegible]~~ drooping at tips

pendent.

shrub, 1 m. tall, flowers white

erect shrub 1.5 m. tall, leaves smooth.

small shrub 0.5 m. tall, flowers white.

bottoms. They are not nearly abundant enough to make this a closed forest or even ~~[illegible]~~ wood.

Ferns are common on ground, becoming much more so toward the ravine bottom. We have examined these in a tangle of weedy shrubs ~~probably~~ as undergrowth, probably largely resulting from disturbance. Some climbing bamboo and a very large Amomum (?) with a bright red inflorescence

It is so dry that the mosses and most of the ferns are curled up.

There are few real climbers,

1946 Ceylon

except in the ravines, but an abundance of scramblers such as Flacourtia, and especially the bizarre leafless shrub mentioned above (3:1166). If this flaller there may possibly be a species in each island and a genus in each.

Roadsides and other recently bare places are covered by a blue-flowered iridaceous plant and a small Eupatorium, several grasses, and Chrysopogon, ~~and~~ Cigenon parvinervum, Pteridium etc. The steep cuts are being colonized by several grasses, Sphenomeris, and by Lycopodium cernuum. Here definitely seem to be sporelings of this plant unless there are gemmae. There has never been any volcanism as far as known.

On talus below roads, brushy roadsides, etc. in the area of tea plantation have a low brush of Rubus, Cestrum, Ulex, Solanum, ~~Cestr~~ Hypericum (a tall shrub with large flowers when sterile it looks like Veronica (Hebe)), and a shrubby Lobelia.

March 31 [illegible]

[illegible] edge [illegible] of the mountain [illegible] in the [illegible] bare land is a second [illegible] at the [illegible]

[illegible] and tangled below 1 m. [illegible] at [illegible] edge [illegible] 1 to 2.5 m. [illegible] and in places even [illegible] 4 m. [illegible] pressed [illegible] at [illegible] scramblers: Adelia, [illegible] [illegible] makes [illegible] [illegible] most difficult and unpleasant. [illegible] composed of climbing bamboo, Pteridoma, Wood Nymphs, Berberis, Hedyotis sp., Lecanopteris, Pottia aculeata, Pittosporum, several woody Compositae, Gaudenia (?stem), Pteridium, Osmunda, ? [illegible] ? [illegible] Tabernaemontana ?, the same bizarre leafless shrub seen yesterday, and several [illegible] and a little [illegible]

1974 Ceylon

At 1 m the steeper slope
of the mountain, as I came
the tops of the ridges, I ascended
in a woodland which
seems to be a much
degraded montane rainforest.
It has scattered trees
of ~~[illegible]~~ a number of species 10-15 m.
high, mainly with
a [illegible] growth
habit, spaced 5 to
10 to 20 m. apart, closer
and closer together upward
to about 150 m above the road,
from where it closes into
a montane rainforest
quite degraded and with
dense tangled undergrowth
3-4 m. high.
In the woodland part
the ground is covered by

March 31 - slopes east of
Nuwara Eliya
in tangled scrub.

30789 Hedyotis?
very common, even in almost
bare places

90 Toddalia aculeata
common

91 Morinda
occasional

a dense [illegible] 1-2 m
tall, with some [illegible]
from the ground, [illegible] some
[illegible] dominant [illegible]
[illegible] opposite-
leafed hirsute plant [illegible]
shrub, with the slender
Hedyotis? common as well
as the other hirsute plant
seen yesterday, and young
[illegible] of a dominant tree
in the Myrtaceae ([illegible]?).
Some distance beyond
[illegible] and
lose the [illegible]. I
find a [illegible] piece of
vegetation by the road
of [illegible] cutting [illegible]
is a montane rainforest
accompanied by [illegible]
[illegible] the [illegible]
[illegible] a [illegible] plant.

1960 m.

erect slender shrub 1 m. tall
(others seen to 3 m. in taller vegetation);
flowers white.

erect to scrambling or
scandent shrub, arching when taller
shrub, 1 m. tall; fruit
immature

1956 Ceylon

March 31 – road from Nuwara Eliya to Hatton (Botanical Garden, down Kalugala Ganga stream).

Upper part of stream valley flat, mostly in truck gardens. In places the streams dammed up for bathing, planted with trout by Ceylon Fishing Club.

Just below Nuwara Eliya Eucalyptus and some sort (casuarina equisetifolia?) as planted along roads, windbreaks. Tea plantation in this section are unusually cut into flat areas so hedges for protection against wind etc. Guide says this work done by one company. Shade trees in these plantations. Many of the plantations have been severely hit by frost 18 months ago, see guide, and some are pruned back almost to the ground.

Down a short distance the tea plantations are replaced by brushy forest on the slope and some grass on lower slopes, or all forest.

At about mile post 52,

a little way back up Kalugala, the pattern of grassland on lower slopes, montane rainforest on upper slopes and in ravines is rather definite. The forest is mixed and of low stature. The grass is mainly tufted (Cymbopogon?) and has scattered gnarled Rhododendron trees in places.

Near mile post 54 the grass and forest was examined. The slope is about 30°. The lower 100–150 m. is grassland badly overgrazed, with a blue-flowered rubiaceous plant locally dominant, bunchy Cymbopogon locally prominent, and a close sod of several creeping grasses filling the interstices. The forest has probably been gradually pushed back, as a narrow strip along its margin has recently been felled. Soil changes gradually from black just above the stream ravine to brown at the edge of the forest. A typical profile was

scattered Rhododendron trees on a few cm.

1950 Sept.

exposed where the underlying schist bedrock was being quarried for road material. This was just above the edge of the ravine. Profile as follows:

0–10" black sandy loam gradually changing to
10–20" yellowish brown clay with some rock fragments, abruptly changing to
20"–4-6' mottled irregularly reddish clay with rock fragments, directly on hard bedrock. The rock weathers very in inch or two, then is red and dark gray.

The surface layer varies from gray to black and also in thickness. It would be of interest to know if this black layer has been formed as recently as its occurrence near a receding forest margin suggests.

The ravine at bottom where not excavated, is filled with a ragged wood, partly native trees, partly Acacia dealbata. A little Gleichenia breaks here, a few tree ferns.

The forest is a type of the gymnocarpa association. The trees (stature 5–8 m.) are quite crowded, with relatively small, leathery, small leafed, dark green color, grey to reddish grey. Lauraceae trees are typical (Metrosideros?), Eucryphia, and Weinmannia (?). Vascular epiphytes common on trunks and large branches, mosses and lichens fairly abundant and even to small twigs in crowns, not among branches however to make it a cloud forest in more front.

Climbers and scramblers are common, though mostly in more disturbed parts, mostly prickly, such as Rubus (?), Toddalia, etc., some combine to form a startlingly chequered appearance.

In less disturbed parts undergrowth is mostly of tree seedlings, tall but easily enough penetrated even with bad ground use for one and Pelagonella.

It is mostly mud, more disturbed probably by cutting for firewood and

[illegible] is a much [illegible] ending only with [illegible] [illegible] [illegible] bamboo, [illegible] Rubus [illegible] [illegible] etc.
The Opening are closed with a tangled Hedgotis (2 spp.) Climbing bamboo and Rubus (2 spp.) as well as some leguminous species.
Penetration here is very uncomfortable without much cutting.
In the forest was seen a [illegible] with [illegible] very like the zebrina form of [illegible] but with a digitate leaf with 3 [illegible].

Mar. 31 – Hakgala Gangá about 1 mile above Hakgala.
30792 Hedyotis Trivenii Deb & Dutt
in tangled opening in degraded montane rain-forest

The bamboo has hollow stems and climbers [illegible] m. in some vegetation looks [illegible] like [illegible] [illegible]

On some grassy slopes not far from here are some plantings of Eucalyptus

Hakgala Garden are beautiful, have a wealth of species of plants but show definite signs of neglect. 5581 ft. alt.
33 acre
Mean annual rainfall 94.33"
Mean temperature 60.5°F
Lowest " 33.8°F
Highest 82.2°F

1800 m.

shrub 15 m. tall erect

1956 Pg Con

[illegible] Kawa Eliya
[illegible] Bulwela gorge [illegible]
Pedro, and Kawa Eliya.

I passed a road Kawa Eliya
Lake has scattered
rhododendron, in places a more or less
woodland. The Rhododendrons
extend along the road
everywhere where the
road is not through forest.
Eucalyptus and Cupressus
are abundant only planted
in plantations not
well hedges common are
Ilex perdicum and
lilies, some grassy, other
scrub covered, other well
tended pure montane rain-
forest. Other covered by
planted Eucalyptus and
Cupressus.
The Nuwaraeliya are a
rolling grassland with
scattered Rhododendron,
bearing orchid.
Rhododendron woodland
near here immediately
along road, 3-4 m. deep, only
a strip along road. The
origin of this is obscure
either the trees were left when
all else was cleared, or they have
grown up relatively rapidly

afterward, which seems
unlikely. But in the forest
Rhododendron is not obvious,
though there was no time
for a close examination.
The gorge of the Bulwela
stream has part of its
walls covered with dense
montane rain-forest
apparently in fair condition.
The slopes are very steep.
However part of them are
in grassland.
Toward Kawa Eliya
the forest becomes very
degraded, with sandy
Rhododendron near
road, patches of tangled
scrub with much
hypericum mysorense, some
tea plantations, Pinus,
Acacia dealbata and
Cupressus planted near
and around Kawa Eliya,
even a few pines
of at least 2 species. Here
also some marshes in
the flat valley bottom
and some gardens.

April 1 – Tea by rail from Nuwara Eliya to Colombo.

The upper part of the canyon of the Nanu Oya river is almost entirely dense wooded. The lower part to Nanu Oya (5137 ft.) is all covered by tea plantations. This continues downward except on the steepest slopes. No consistent pattern in planting but more seem to have to move running up and down the slopes than not. Scattered shade trees, mostly Grevillea and Erythrina. In the neighborhood of Watagoda most of the tea is cut back rather drastically – this is a measure against the tea blight disease. The green spacing of the tea is so open that the shade is moderate, indeed. The distance varies but was at average 20-[illegible] m. Albizzia is used in some plantations, especially lowerdown. Below Watagoda and especially near Talawakele, small closely pruned trees of Erythrina

are planted a few yards apart between the tea as shade trees. These are rather regular and can scarcely be called forest, many of them for four manure. Each tree has only two or three or at most a few leafy branches left on it though ~~at~~ on some plantations below Talawakele they have been allowed to grow more and have a turkey cluster shape. Here also Gliricidia ~~seems~~ is almost as common as Erythrina in this second layer. This layer is pruned to 2-3 m.

Near Patton are some Eucalyptus plantings. Shade trees, mostly Grevillea closer together, perhaps on a past, forest slopes. Small intermediate trees more uncommon here. Some plantations are below Patton with no shade at all.

Tourists

Tourists locally common from here down.

Grassland with Imperata and some Thuneda – more and

1956 Ceylon

...n. common ~~dte~~ downward
some patches of forest
and Eucalyptus plantations.
Shifting cultivation rather
common. Patches of thicket
and of a large Rattbollia
(similar to that found on Guam
in 1954). Ravines filled
with thickets.

~~[illegible]~~ (Rabbit stew)

Near foot of steeper
part of mountains the
greater part of the land
is in clearing & shifting
cultivation. Coconuts appear. Now
available first family
estate rice paddies,
also rubber plantations.
Much grassland. Few
tea plantations here.
General feeling is a
mosaic of [illegible]
land uses, small patches
of wood. Valley bottoms
and lower hills practically
all are in rubber, coconut,
or tea. Some areas terraced
for rice. Breadfruit and
mango tree common, also
bananas, Areca, Caryota, palms.
As valleys get wide the
rice area increases. All
in stubble. Shrubby Lobelia
occasional in waste stuff.
Soil erosion very common.

Tea plantations seen in
very poor condition.
Especially much erosion
around Pallegama. Shade
trees (G. robusta) in tea
plantations seen in
rather poor shape.

1849 ft.

Around Elapane the
tea plantations are
apparently abandoned
bare red soil with
scattering bushes,
scattered shade trees,
general look of land reddish,
except valley bottoms
which are in rice and
miscellaneous tree cultivation.
Rice conspicuously
terraced, terraces mud-walled
and well constructed.
Below here much of the tea
is in better condition.
More heavily shaded than
here. Upper tea has
E. B. mixed, mostly
G. robusta with second
layer between of Flindsia
and Erythrina. Areca
more and more abundant.
Rubber plantations more
and more common. Some
Cacao. Steeper hills
mostly in grass with
patches of wood. Open

Tea plantation on steep slopes, rows running straight up and down.

At Gampola the valley becomes broader flat-bottomed with rice fields. 4 ft. 2 tracks. At Gampola station the blood level Aug. 2, 1947 is marked about 8 ft. above ground.

Villages and dwellings almost completely concealed by mixed planting of coconut, jak, kitul, Mango, areca, breadfruit, and other trees, with an understory of bananas, guavas, etc. Some bamboo. This is upper valley of the Mahaweli River.

One rubber plantation seen with understory of tea.

Hills here very low, but still abruptly rising from flat paddy land.

Clumps of sugar cane seen but no sugar plantations seen anywhere in island.

Many carabas working in rice fields.

Below Peradeniya the slopes are largely covered by mixed tree cultivation with

with coconut, Rubber, jak, breadfruit, bananas, Carpota, areca, kapok, mango, bamboo, and with cacao under some of the rubber trees. Very little tea below Peradeniya. Some slopes terraced. Valley bottoms where flat, are rice.

First Salvinia seen at Nuwara.

1956 India

April 4 - Kanhen ~~Lake~~, National Park.
Open woodland on deep stony ground

7,147	Callipteris flonbunda very common	semi-scandent shrub
95	Canthium common	small shrub
96	Adina cordifolia common	small tree, deciduous
2 96	Holarrhena occasional	shrub or small tree, lactiferous; flowers white, fragrant.
97	Coldenia procumbens local in open dry water course	very prostrate blue
98	Mollugo local in open dry water course	prostrate
99	Stylosanthes, Cantharospermum scandens rare	flowers yellowish.
76x00	Carissa carandas occasional	shrub, apparently not deciduous; flowers white.
01	Morinda tomentosa occasional	shrub or small tree, flowers white.
02	Derris scandens occasional	woody climber, tree, steril.
03	~~Bambusa~~ Dendrocalamus strictus dominant, especially in wide valley bottoms.	Culms clumped, up to 30 cm. apart, green, dull, ending to 10-15 (or 20?) m. tall, branches distichous and emerging conspicuously at right angles, lower branches solid, longest 3.5 m long, spiny, forming formidable tangles, undeciduous.

1956 India

April 4 – Indian Cove
Indian National Park
Dry deciduous forest
altitude 800 ft.

7	7.7.56 Capparis	
	6) Tanqueria divaricata	— [illegible]
	occasional	small tree flowers green petals reflexed stigma fleshy. more or less bonsai.
8	Grewia tiliaefolia	— small tree, flowers yellow.
	occasional	
	9) ~~Indopersicum~~ Caesalpinia ~~[illegible]~~ mendoza	
8	Ephedanthus	erect, diffuse
	rare in ledges	
9	Capparis sepiaria	semi scandent shrub climbering on small tree.
	rare	
10	Vitex negundo	— slender small tree
	occasional	
11	Solanum	shrub, fruit orange
	occasional near town	
12	Holoptelea	tree.
	occasional	
13		— [illegible]
14	Randia dumetorum	small shrub
15	Crataeva religiosa	shrub, deciduous, flowers yellowish
	rare	
16	Fadenia	— small tree, fruits yellow.
	occasional	
	April 4 – Juhu Beach, Bombay	
17	Pandanus	small tree
	top of beach, gravelly sand	

1956 India

April 5 - Bombay

Oleodendrum inermis is used as an ornamental, being trimmed into hedges. Its leaves are uniformly obtuse or rounded at apex. Its flowers seem a bit smaller and more slender than those of the eclipse form.

April 8 Karaca indica
planted

Crows are common here, but not as common as in Ceylon. They are however, accompanied here by vultures and "hawks" probably another vulture with a long rather square-cut hawk like tail, black (dark in color) These may be seen commonly soaring around the city.

There are rather extensive mud flats in eastern bay largely by mangroves of one species only, Avicennia alba (?) which is uniformly very small, less than 1 m. tall, but growing quite densely. They are said to be so small because of grazing and cutting for firewood.

Some areas of the mud flats are quite bare largely covered by a whitish salt (?) crust, while smaller areas, interspersed with, many places are covered by a grass (a vetiver?) and other herbs, mostly about 1 - 2 m. tall.

Red flowers orange.

and are especially abundant around the "Tower of Silence" of the Parsees where they devour the flesh of the Parsee dead, placed there for this type of disposal.

1956 Indian

Upd 4 - Sichu Beach, near Hinatay

This beach consists of a broad bank, a very low almost flat ridge of fine sand and silt, called and firm underfoot. The ridge is almost entirely covered by coconut plantation except for sheds and houses. From this is a [illegible] of ~~[illegible]~~ shallow water. The outer shore is a very broad flat beach, but into the ridge is formed an abrupt escarpment about 1 m. high. The beach is of fine gritty sand with some admixture of larger particles of shell.

Pandanus fascicularis is common here and appears to be the same as that seen at Hikkaduwa, Ceylon, except for a greater tendency to form ascending branches. Ches 20-30 cm. tall, very loose.

What is called Pandanus odoratissimus occurs along the escarpment at top of the beach. It is a small tree a bit more slender than Pandanus tectorius; leaves with

spines 1-2 cm apart, the bases broad, the spines divergent at about 30° from margin of leaves. The fruiting head is a ball only about 10 cm. diam., spherical, the keys quite flat on top, and with more stigmas than common in P. tectorius. This tree looks very much like the one collected in Ceylon except that there is no tendency for the leaf bases to persist on the branches and the keys have more stigmas, also the fruiting head is smaller.

India

Jul 6 – Kanheri National Park, north of Bombay.

The lower part of the area is flat and covered by mango orchards, some parts rather poorly landscaped and planted to ornamentals. It is said (by Prof. J. R. Bonda) that a horticulturist was appointed director of the park and that he had the idea of landscaping it and making it a place for people to have picnics on Sunday afternoons. He got into financial troubles and was let out. Now the government "milk colony", a government run dairy, is using the park as a pasture.

The lower part is really very looking. Brassica palms are very common scattered over the flat low country. Many of them are covered in their lower part by strangling figs, Ficus benghalensis and Ficus glabra(?). These form a rigid cage of aerial roots around the

trunk but do not seem, in most cases, to hurt the palm any. The ones seen did not generally extend more than half way up the trunks.

As the dwellings and orchards disappear and the ground begins to rise gradually to be rolling and slightly cut by dry stony watercourses. The ground is very stony with boulders scattered over it. A Argemone mexicana grows scattered in the watercourses. The rest of the country is covered by a low scrubby thorn woodland, open enough so that walking in an irregular course is not impeded. The ground is baked and dry, the grass and many of the herbs completely dry and in most places burned off. The fires are set by the people to induce grazing. Several herbs especially Blumea eriantha, Celosia, Cucumbers and a [illegible] are in [illegible] condition. The two latter are

Hygrophila spinosa

Hygrophila spinosa T. Anders. (Acanth.)

close, prostrate and brown-gray in color. The woody vegetation is a deciduous mixture of clumps of bamboo, small trees, shrubs, and woody vines. Most of the shrubs, the bamboo, and some of the trees and vines are spiny or prickly. The bamboo, which is the tallest plant, forms clumps of ascending culms, 10-15 (or 20) m. long, green with internodes 20-25 cm. long, 7-8 cm. thick. The branches are distichously arranged and emerge at right-angles from the stem (divaricate). Culm sheaths and leaves are deciduous, have been shed at this season. New leaves are just appearing. The lower branches are elongate, to as much as 5 m. viciously spiny, and form terrific tangles about the bases of the clumps. The culms are from very close to as much as 30 cm. apart in the clumps.

Trees here are mainly Ficus indica, Bombax malabaricum, Bauhinia variegata (completely deciduous), Premna latifolia, Pongamia glabra, Zizyphus jujuba, Morinda tinctoria etc. Shrubs are Calicopteris floribunda, Holarrhena, Pandanus canaria, Randia dumetorum, Carthium sp., Flacourtia, Acacia catechu (with small curved white spines and very fine compound leaves), Jasminum malabaricum, Carissa carandas, Pseuderanthemum leucopyrum, Zizyphus rugosa, etc.

Tinospora cordifolia is a woody, now leafless vine, sends down slender, cord-like aerial roots. Several of the woody vines are relatively quite abundant. Calicopteris tend to be scandent.

As the foothills are approached, the bamboo becomes definitely dominant, the vegetation more closed.

and bamboo with, conspicuous ~~thorny~~ prickly trunks, become conspicuous and common.

As soon as the actual hill slopes are reached the bamboo almost drops out. I see it in the flat valley bottoms where it remains quite dominant.

In the slopes the vegetation changes to a dry deciduous forest not especially thorny. Bamboo is absent completely.

In the vicinity of Kanden Caves, at about 150-200 m. the forest contains Pterocarpus, Dioospyros, Vanguieria spinosa, Wrightia tinctoria, Stereospermum, Terminalia colorata, Erythrina, Hardwickia binata, Odina wodier, Holoptelea, Bombax malabaricum, Sterculia, Ficus, Ficus mysorensis etc as trees. Shrubs are Euphorbia neriifolia, Capparis sepiaria, Vitex negundo, etc. At the altitude of by Vanguieria, Vitex, Mimusops, etc some of the evergreens have leaves. Above about 200 m.

more of the [illegible] leafed or [illegible] [illegible] by leaves are in their first [illegible]. ~~[illegible]~~

Above the caves Ficus mysorensis trees ~~10~~ 10 m all leafless but in blossom. Terminalia coriacea, Wrightia, Mimusops, Euphorbia, and Odina are in young fruit or flower.

These slopes are massive accumulations of volcanic lavers [illegible] pyroclastic material. [illegible] in the vicinity of the caves degradation has been arrested at an intermediate stage. There are extensive areas of completely bare rock. Clumps or bushes of Euphorbia neriifolia, looking like cactus, are scattered here and there. Patches of grass, Pennisetum ciliare, Indigofera and other herbs are completely dry. There are desiccated pools which during the search part after the monsoon contain a

of scrub flora. Not a
trace of a plant in Ceylon
like this now. Grasses
especially Andropogon are
common in the rocky crevices
but now completely dry.
At this season most
of the plants are in a
leafless condition. However
the total rainfall is said
to be about 80" annually.
The undergrowth in
this dry deciduous forest
is almost all of a species
of Strobilanthus with a
negate habit of growth
and persistent largely lavender
flowers, very widespread.
In the soft sandstone
rock are numerous artificial
caves, excavated by Buddhist
monks 2500 years ago.
Some of them are very
impressive, lines of columns
on the walls, especially
around the entrances, so
quite beautiful. Bats are
numerous and their
odor and squeakings are
very obvious.
The age of these caves
gives some measure of the
extent of human influence
on this vegetation.

April 2 Colombo

Edges of Galle Face green. The green itself is a lawn principally of cynodon dactylon, but with a number of weeds including Borreria sp. & Hedyotis sp. Cleistocalyx [illegible] etc. protected from mowing. Around the inner edges along the fence of the military reservation, a number of weeds make up a mixed vegetation

Oldenlandia umbellata L.

102 | 17 | Hedyotis
common in weedy places

Along the railroad tracks in the Fort area Boerhavia is very abundant. When left undisturbed it carpets the ground and the extensive diffuse leafless inflorescences form a layer 15 a mou cm. thick above the mass of leafy parts of the plant. This is very different from anything observed in the Tropics.

20 Boerhavia erecta L. (Det. D. Nicolson)
abundant along railroad tracks

Orange and pink varieties of Lantana camara
Tephrosia indica
Sida sp. Tridax procumbens
Brachiaria distichya. Mimosa pudica. Borreria sp.
Hedyotis sp. Ipomoea pes-caprae etc. are common.
Scaevola serica grows along the fence. The Ipomoea pes-caprae is the same form as observed in Kikkaduwa and in Bombay.

procumbent, flowers lavender.

stems ascending. flowers rohtish!

April 10 - approaching Male Islet from slightly north of east - conspicuous parallel but rather broken slicks irregularly distributed running north and south perpendicular to the wind direction roughly parallel to direction of reef for some mile offshore. Wind a gentle breeze, sea with ripples and very small swell (in at least two directions). These slicks at irregular intervals of from 50 to 200 m.

The Admiralty chart of Male ( ) does not seem to be very accurate at least it is hard to relate the islets shown on it to those actually seen.

All islets visible seem pretty well covered by coconuts. Hulule has brush on its northeast extremity. Also along its seaward side there seems to be a shrub fringe.

small islet on S. side of channel

[illegible] islet seems to be covered by low shrubby vegetation, no tall trees. Seems to be rocky without much beach

Male islet has rather few coconut trees as seen from the seaward end, but is well wooded. Variation in color suggests mixed forest (actually trained orchard planting.) ~~[illegible]~~ Around east end a broken ~~[illegible]~~ seawall fringe covers top of beach ~~[illegible]~~ to be rocky.

Lagoon seems to have islets scattered in it.

Outer part of reef exposed at mid tide on both sides of channel, but not at all high in lo. ~~[illegible]~~ Islet has coconuts and several hundred smaller trees Pemphis on inner side

Lagoon side of Male I. is built up like a city with white 2 + 3 story buildings of masonry. Few trees in this part.

Ships anchor in part of lagoon dredged in from Male I. between it and several small lagoon islets opposite huge hill. Anchored within 2½ yards of shore, but in deep water. The lagoon front of Male I. is walled up and built into an open harbor for small boats. English flying boat lies & buoy about 2 yards from shore.

Most of the wall masonry is rough, but the part immediately around the entrance is concrete.

The wall is said to be 200 years old. Except for the concrete part at the entrance it is made of stone without mortar and must be repaired after each monsoon. During the S.W. monsoon the lagoon is very rough and protection for small boats is necessary.

Today the lagoon is like glass. There is almost no breeze. The sky is partially cloudy. Temperature and humidity are high.

Cultivated plants seen in Male

- Sesbania sesban
- Mangifera indica
- [illegible]
- Spondias dulcis
- Pseudoanthemum laxiflorum
- Jasminum sp.
- Capsicum spp.
- Acalypha amentacea v. circinata
- Areca catheccu
- Cordyline terminalis
- Ceiba pentandra
- Carica papaya
- Eugenia ~~aquea~~ ? fruit eaten
- Nerium indicum
- Nerium oleander
- Hymenocallis littoralis
- Crinum ?
- Casuarina equisetifolia (trimmed into hedge)
- Piper betle
- Pisonia grandis ? (small tree)
- Plumeria speciosa (Singapore)
- Phyllanthus niruri ?
- Cocos nucifera
- Manihot esculenta
- Hibiscus tiliaceus
- Saccharum officinarum
- Zingiber zerumbet
- Euphorbia tithymaloides
- Passiflora edulis
- Thespesia populnea
- Phoenix dactylifera

Cordia sp. (?)
Bougainvillea spectabilis
Moringa oleifera
Psidium guajava
Alernites moluccana
Tecoma stans
Antigonon leptopus
Citrus sp.
Ocimum sanctum
Punica granatum
Annona
Catharanthus roseus
Lagerstroemia indica
Hippeastrum puniceum ?
(Vale vermillion)
Lawsonia inermis
Peltophorum ferrugineum
Pseuderanthemum carruthersii
var. atropurpureum
Musa sapientum
Clerodendrum sp.
(long tube - siphonanthus?)
Delonix regia
Pandanus sp.
(large, edible fruit)
Pandanus sp.
(small, lvs. spineless)
("kasima" prized for odor
of staminate fls.)
Vitis sp.
Hibiscus - ornamental hybrids
Muntingia calabura
Melia?
Adenanthera bilimbi

Courtyards are covered by a smooth layer of a coarse sand composed of Halimeda fragments and a flat foram shell fragments, etc.

Thespesia is the common tree along lagoon shores. Wood used in boat construction for gunwales and free board. Lower parts of each of coconut wood; hundu is Maldive name for Thespesia.

The general aspect of Male is one of extraordinary cleanliness and order.

The town is surrounded by an old wall just over 6 feet high. Similar but lower, very well kept walls line all streets and separate gardens.

Most towns are of coral rock.

April 5 Male Atoll
coral sand in waste
places

36 821. Lachnophela jamaicensis
occasional in open places

22. Thuarea involuta
open places

23. Lalandhoe pinnata
occasional

2 24. Ochrosia oppositifolia
occasional near outer beach

3 25. Clerodendrum inerme (L.) Gaert.
occasional near outer beach

1 26. "Acer Imperiensis Hizra"
One tree seen on playground
near outer beach.

2 27. Calotropis procera
common

2 28. Indigofera tinctoria L.
common locally

3 29. Nostoc
common locally on bare ground

1 30. Euphorbia ~~prostrata~~ dubiosa Willd. (?)
occasional & common locally

1 31. Portulaca quadrifida L.
very local

flowers deep blue violet
"malambu"

very prostrate. leaves
stiff.

erect leaves very fleshy.
"fatingaa fala"

small tree; flowers
white, cymes ~~on~~
continue to flower even
after fruits are well
formed. "lumburi"

low shrub, leaves
fleshy, flowers white
with maroon stamens
and style. "dungeti"

spreading vine with
round cross. leaf.
"~~fili~~" "fili"

shrub to 2 m, tall
corolla and corona purple.
follicle fleshy at time
of dehiscence. "muva"

low shrub, flowers
dull salmon color.
"gulunfida"

prostrate, deep purple.
"bing bima"

prostrate, fleshy, purple.
"mahunu fida"

36832. Hibiscus tiliaceus
common on seaward flats

32. Terminalia catappa
occasional in scrub at top of seaward beach

34. Scaevola sericea Vahl
dominant in scrub at top of seaward beach

35. Premna obtusifolia
common in scrub at top of seaward beach

36. Guettarda speciosa L.
Occasional in scrub at top of seaward beach.

37. Wedelia biflora (L.) DC.
Common in edges of scrub at top of seaward beach

38. Albizzia lebbek
one tree seen on open flat at end of island

39. ~~Convolv~~. Merremia dissecta (Jacq.) Hall.f.
climbing in scrub at top of seaward beach

40. Cyperus rotundus L.
low waste ground near lagoon

well-formed tree with erect trunk, rounded crown. flowers yellow, turning red center
"mandoru dihā"

tree 5 m. tall flowers white, fruit immature, sharply bicarinate "middi"

shrub 3 m. tall; flowers purplish toward center fruit white fleshy. "magu"

large shrub or small diffuse tree immature when broken flowers greenish white fruit turning blackish "dakandu"

small tree, 4 m. tall, flowers white; fruit immature. "wunni"

sprawling resinous smelling herb; flowers yellow. "mirihi"

enormous spreading tree, fruit not quite mature. "ritaka"

herbaceous vine, rather extensive, corolla campanulate, white with carmine center.

colony spreading from deep rhizomes. "Handukari"

 1936 Maldive Is.

3684. Gossypium herbaceum L.?
occasional

42. Datura metel L
occasional

43. Ricinus communis
common

1 44. Amaranthus viridis L
common

2 45. Ficus [illegible]
occasional

2 46. Lida humilis Willd.
occasional

1 47. Portulaca oleracea
common in open places

2 48. Fimbristylis cymosa
common in open bare places

2 49. Turnera ulmifolia L. var. elegans (Otto) Urb
common

1 50. Euphorbia heterophylla
very common

1 51. Lysimachia nodiflora (L.) Gaert
common locally

52. Thespesia populnea (L) Sol. in Lind
common generally, especially along lagoon shore

(to p. 130)

shrub 2 m. tall.
~~[illegible]~~ "olk hafa"

low spreading gray-green herb, flower pale cream color.
"hudu [illegible]"

shrub 1½ to 2 m. tall
"[illegible] maniki"

eaten "masuqu"

banyan-type tree but multiple trunks and aerial roots not much developed. "dumbu"

prostrate, flowers orange.
"rodikka"

prostrate, fleshy, brownish green. eaten by people as pothel "raidgedi"

densely caespitose, roots with pleasant peppery odor

herb up to 0.3 m. tall, branching; flowers showy, yellow.

herb up to 0.7 m. tall, milky, bases of bracts scarlet.

flowers yellow.
"miri [illegible] handidi"

tree 8-10 m. tall, flowers yellow. wood used for freeboard of boats.
"hirundu"

1956 Maldives
Information from Mr. Ibrahim Ali Didi
Hurricane year end of 1955 blew down coconut and breadfruit trees threw up large stones on the reef, built a natural breakwater Velidu, on Milladum Maadu South atoll is a length of 300 feet long 30 feet wide on reef sufficient to shelter small ships for about 3 months. To open an entrance for ships through this. Several other islands affected the same way this breakwater formed in 2 hours. Would have taken thousand years. Mainly of small stones and sand, a few large stones.
One island had a passage cut through it - 8-10 yards wide fishing boats can pass through. Molladu, Filladum Mati atoll.

Elephantiasis

Leprosy
Relatively isolated
Venereal diseases
unknown in Maldives
10 years back came
from outside spread
very rapidly

Mosquitoes formerly
not very troublesome but
in recent decades have
become very much so.
Do not seem to respond to
ordinary precautionary
measures such as
covering standing water
cisterns etc

Crows occasional in Male
not found on other atolls
land crabs and hermit
crabs common. For the
crabs not only eat the flesh
of the pandanus fruit but
bite open the cells and eat
the seeds, too.

Two examples seen of
a large heron resembling
the great blue heron in Ceylon.

April 10 Male I. (cd)

1 085 3. Paspalum vaginatum Sw.
local back of lagoon shore

77. Cyrtococcum humilis Willd.
rare in dense weedy sod back of beach

1 79. Emilia sonchifolia var
common in dense weedy sod back of beach

— 80. Phyllanthus debilis Kl. ex Willd. det. G.C. Webster
common in weedy place

1 87. Sedgolis umbellata (L.) Lam.
common in dense weedy sod back of beach

2 88. Lippia nodiflora L.
common in dense weedy sod back of beach, also generally elsewhere

2 89. Boerhavia erecta L.
occasional

2 1 90. Eragrostis amabilis (L.) W. & A.
common locally

2 91. Phyllanthus amarus Schum. & Th. OK. G.C. Webster
occasional

2 92. Indigofera tinctoria L.
occasional

2 93. Cenchrus echinatus (L.) Morich.
common

1 94. ~~Panicum~~ Brachiaria subquadripara (Trin.) Hitchc.
occasional in dense weedy sod.

2 95. Cuscuta procumbens
very common, parasitic

forming a loose mat
stems
prostrate flowers
pale orange
"weedikka"

leaves glaucous,
somewhat fleshy
flowers pinkish purple,
only slightly exceeding
involucre. "kurkulu"
"kaalu bunbu"

prostrate, flowers
white. "ennmudi"

very prostrate, flowers
white. "midati"

Boerhavia
stems ascending
flowers purplish.
"rundi ung"

low stature may possibly
result from trampling.
flowers salmon.
"fanu bulu"
ung small grass

"Cuscuta

ray flowers white
"maruna

1950 Maldives

1 69. Glycosmis cochinchinensis (L.) DC.
common in dense woods
and back of beach

1 68. Luffa aegyptiaca hirta L.
common

2 73. Nothosaerua trachiata Wight
common in dense woods
and back of beach

1 67. Boerhavia repens L. (+ b. diffusa probably also here of Hugo)
used in dense woods

1 70. Boerhavia repens L. ?
are

1 71. Acalypha lanceolata Willd. ?
locally common

1 72. ~~Acalypha~~ Micrococca mercurialis
rare

1 73. Phyllanthus maderaspatensis L
common

2 74. Vernonia cinerea (L.) less.
common

April 10 - (Male) Atoll
2 cultivated in a garden

1 75. Zizyphus jujuba (L.) Lam

1 76. Eugenia ~~[illegible]~~ javanica Lam

1 77. Phyllanthus niruri Bull.

2 78. Pseudoranthemum carruthersii Lem.

1 79. Codiaeum variegatum

[illegible]

[illegible]
"[illegible]"

[illegible] "[illegible]"

prostrate, [illegible]
"[illegible]"

prostrate, [illegible]
"[illegible]"

[illegible] that succulent

"[illegible]"

[illegible]
"[illegible]"

small tree, [illegible]
"[illegible]"

large tree, fruits [illegible],
quince, [illegible]
(also good [illegible])
diffuse [illegible]
leaves at top slightly [illegible]
shrub 3 m tall covering
white, [illegible] dotted [illegible]

common many forms
cultivated [illegible]

195. Maldives

34080. Acalypha amentacea Rx.

81. Jasminum azoricum L.

82. Jasminum grandiflorum (L) Aitchi

low shrub leaves reddish. ~~[illegible]~~

– climber flowers white very frag. ant. "glamuna"

– climber flowers white frag. ant. "vandu ma"

Apr 11 - Ana I.
Small islet in lagoon with rather sparse growth of coconuts, a few barely large bare frond and a other veg. [illegible] [illegible] of beach. Interior seems rather open. So far as can be seen from [illegible] way east, its entire coast is sand. North end has no coconuts, but low mixed scrub. Centre is rather open.

A seal said to have been found and killed on Milandu atoll. (Atoll ?) Not known in Maldives previously. Pieces of skin brought to Male.
Once a crocodile was found on Miladu Madu atoll (Atoll N).
Turtles are protected. To kill one a permit must be secured from Male

and to be two varieties of edible pandanus.

Domestic animals chicken cows goats cats

Cepud (Uda Badoo)
Largely sand
coconut [illegible]
[illegible] bread [illegible]
[illegible] and [illegible]
[illegible]
[illegible]
people say [illegible]
[illegible] and [illegible]
[illegible] long and
A few small [illegible]
[illegible]
chlorotic. One pon Lumandu [illegible]
found [illegible]
[illegible] of [illegible]
earthworms [illegible] very frequent.
Taccca seems general in interior
Nastoe common in few places.
Pandanus odoratissimus
[illegible] something similar
occasional very long leaves.

Strip of scrubby [illegible]
each of [illegible] [illegible]
largely [illegible]
[illegible] Pidellada. Cemplos.
Fernandea. Calotebyllum
[illegible] Messerschmidia [illegible]
[illegible] Tournefortia
In the interior are also
trees of Hibiscus, Adoplyllum

[illegible]

[illegible] sudden occasional

The entire islet seems composed of fine ~~[illegible]~~ sand with some coral fragments. The general level is about 1 foot above high tide and a small escarpment is cut at high tide level

Land purslane found on beach but not abundant. In about 25 m. the sand becomes more solid so the inland [illegible] scarcely could [illegible] much more than [illegible] level.

In the interior the soil ranges from dark brown to black when moist. This is at least 3 dm or more deep. [illegible] are abundant pieces of phosphate [illegible]

[illegible] hardwood [illegible] heaved [illegible]

Pemra [illegible] burning of coconut husk

Olea europaea shows [illegible] patch of Tuinga near house. [illegible] is [illegible] stick-small seeds like small horns of [illegible] asiaticum

Pandanus in interior has large head [illegible] perhaps [illegible] eaten ~~[illegible]~~ "Kaniko" small ones called "bokit" not eaten were only at top of beach

On south side the beach is eroding away, exposing an extensive mat of coconut roots. Water sloshes up far under the sand among these roots. Shallow water with sand bottom extends out about 15 m. suggesting little recent erosion. Coconuts apparently unrooted until they fall over.

Chickens are abundant and scratch up surface soil

In the lagoon are bands of reef and large patches but no small patches seen. They are said to occur frequently though.
The large patches and bands are conspicuously sandy, with irregular growths of coral

Isl. 1. - Furamafuri.
Isolated on reef - inner shore a sandy beach

Coconut trees rather few, much scrub forest. Pemphis common especially around outer shores Scaevola on inner shore.

Well near center of islet lined with concrete, water deep about 3 fms from ground here. Water fresh, tastelessly brackish but drinkable. Not used for drinking

Pandanus here, even in interior, small inedible species, except we've two on north side of islet.
Several shrubs large about 2 m. high, mostly deciduous, some Guettarda, ~~[illegible]~~ seedling Celtis seen
Scattered trees of Tournefortia, Terminalia catappa, Pandanus, a few Pemphis, Messerschmidia
In open or sparse places, Wedelia

Fibracous layer
scarcely developed.
Some Tillandsia usneoides
in few places, none
Bourbavia
In ~~outer~~ seaward end a
small clump of
mangroves - apparently
growing in a dry
pebble ridge just
back of beach.
Seems that a storm
may have filled the
coral gravel in around
these trees, so normal
bases not visible -
trunk simply protrudes
from gravel. Largest
tree dead, medium
ones very sick looking,
smallest look healthy.

Outer end of islet
a loose pebble flat
covered by a thicket of
Pemphis, Cordia and
Pandanus. No undergrowth but many
dead Pemphis branches.
Some pebble lined pools
with mangroves just
back of sharp beach edge
varying from pebbles to
cobbles, very sharp, worn

fragment. Some young mangroves under trees.
Right down toward
south end coming
out of commonly
open, then low a-Pemphis
thickets, a few
clumps of dead
Pemphis standing out
back among such
plants rarely up to seven
feet high well.
Cordia same size and
even larger.

No sign of platform
except flat about
30 yd from shore at
high tide) is some much
eroded remnants of
coral with boards
[illegible] above high tide
the whole end of the
islet is one of [illegible]

Inner end of islet seems
more luxuriant, possibly
because of sandy soil
here the trees are mainly
fibracus, Calophyllum
trees, immature.
~~and large patch of Cordia~~
large strong and a beautiful
grove a few hundred yards, large ht. of Pandanus

Two crows seen here from a distance what appeared to be a flock of white terns but did not get close enough to be certain

Fanucolufuri Islet —
On east reef.
Central part a dense grove of coconuts, open to the lagoon beach except for a few scattered bushes and small trees.
The grove thins toward both ends so that the south part on each end is noticeably sparse and with a pronounced scrub forest probably mostly Pemphis lining the shore and covering the ends of the islet.
This is especially dense on the southwest corner, same a bit 'wind sheared' possibly effect of southwest monsoon.
Interior of grove in center rather dark. At one point the only shore can be seen under the trees from the lagoon. The coconuts on the end are very small trees.
Sandy beach may be seen the entire length of this lagoon side, but in the center a mat

of coconut roots is being undercut by waves.

Lagoonward from this islet and other along this reef is a second belt of reef a hundred yards or so wide. This is separated from the wide outer reef by a belt of blue water twice or more this width.

Today the weather was scorching hot and so near a dead calm that it was scarcely possible to keep cool fetched in long enough to get a my fresh from it. There were only a few scattered patches of cloud. Short [illegible] slightly more of a breeze same only as well as a few scattered large cumulus clouds.

~~Ha~~ Hulule ?. Also along outer reef densely planted in coconuts but has an avenue cut longitudinally North and South and has low scrub with only small coconut trees. Pemphis in scrub and as isolated trees as

well as some long rows along
much of lagoon beach
beyond in most of the
intervals. In center a flat
stretch of open beach where
houses are. Some places
show beach erosion and
exposed roots of coconut
roots. This where unprotected
by Pemphis trees. South end
has coconuts almost to tip.
Islet has an avenue cut for its full length
Small scrap of land
south of this on reef has
why seems (trees) left

1956 Maldive Is.

April 16 - Kuda Badoo Islet

Sample bag contains pumice picked up on beach, phosphate (?) rock found abundantly scattered over soil in interior of island, brown soil taken 6-8" down from the surface in an apparently uniform layer over 1 foot thick but of undetermined thickness ~~black soil~~ This from a semi open place 30 m back of beach on north side of islet; black soil from 8-10" depth in an apparently uniform layer more than one foot thick in coconut plantation apparently the usual soil in the plantation; and a sample of beach sand from the north beach.

3	883. Tacca leontopetaloides (L.) O. Ktze very common throughout coconut plantation		tubers used to make starch. "thit tala"
1	84. Hibiscus solandra L'Her. rare in plantation		erect
1	85. Moringa oleifera Lam. one tree in plantation		sterile tree 4 m. tall leaves and fruit eaten as pot herb "moringa"

36886. Cyperus conglomeratus Rottb.
one clump at top of bank of fine calcareous sand

2 87. Calophyllum inophyllum
common in and around coconut plantation

2 88. Morinda citrifolia s. lactea
occasional in ~~plants~~ coconut plantation

2 89. Hernandia sonora L.
common in beach ridge scrub forest

2 90. Ficus maritima
occasional at top of beach

2 91. Pemphis acidula Forst f.
abundant ~~on~~ at top of beach, growing in sand.

2 92. Mezzenbelimedia gentea
occasional at top of beach, rare inland.

2 93. Cassytha filiformis L.
climbing over trees, not abundant

2 94. Dolichos lablab L.
climbing in bushes and trees and creeping on ground in open or partially open places

1 95. Cassia surattensis Burm f
rare, in sunny open places.

1 96. Flagellaria indica L.
common in coconut plantation

one of tops erect, spikelets very pale

small tree "funa" wood useful.

shrub 1.5 m. tall, "abi"

tree 6 m. tall, leaves glossy, firm; fruit surrounded by loose fleshy inflated envelope, orifice circular, not toothed. "handu"

shrub 1 m. tall. "halaveli"

densely branched shrub; flowers white. Wood used for keels of boats. "hunedi"

shrub 2 m. tall; leaves pale silvery grey, flowers white. "bori"

stems green & yellow; fruit green. ~~vela buli~~ "vela buli"

flowers magenta, fruit straight, white. "dulimeri" Eaten by monkeys.

shrub 1 m. tall, shrub. "rana wa"

erect very pronounced roots common, no mature plants seen. "vihalla gondi"

1956 Maldives

36897. Abutilon indicum (L.) Sweet
occasional in coconut plantation

98. Crotalaria retusa L.
rare in coconut plantation

99. Pandanus fosbergii St John & Hotchkiss
occasional in coconut plantation

(99a. fruit from market in Male)
↳ Probably related Pandanus dubiocarus

Calycopteris

99b. cross Calycopteris hypolucacum C. Müll.
rare of coconut tree

det. H. St. John

99c. [illegible] not related this

erect, scarcely branched weak shrub; flower orange, mostly odorous.

1. ma gulé leaves below

erect herb 1 m. tall; bud yellow, pinkish without. "vihagiyani"

Pac. Sci. 15:331, 1961

large stemmed tree up to 6-8 m. tall; leaves to at least 4 m. long; fruit head oblong, at least 3 dm. × 1.5 dm. none seen mature (key picked up on ground nearby); fruit said to be edible. "kandio".

This is something of the P. tectorius relationship but probably distinct from P. tectorius. Has apparently nothing to do with the small fruited wild plant seen growing around the beach ridge.

April 1 - Funamadan, Vet.

36900. Banyan long escaped
2 one big tree and
many seedlings in
thicket in front beach

2 01. Boerhavia repens L. ~~diffusa~~
common along trails
in sparse coconut plantation

03
1 02. Ipomoea tuba ?
very rare in Cordia Pemphis
thicket

5 03. Bruguiera cylindrica (L.) Bl. ~~parviflora~~
common around saline
pools near outer end of islet

7 04. Morinda citrifolia
occasional in coconut
plantation

1 05. Cordia subcordata Lam
rare along beaches,
abundant in thickets
on very stony ground,
~~[illegible]~~ seaward end of islet

tree 8 m. tall, widely
spreading; fruit
4 sided, up to 8 cm. diam.
abundant on ground
leaves with big crabs.
"kimbi"
all plants seen were
of this form, no extensive
creeping ones seen at all
"buranda gandi" not eaten
twiner; stems.

small tree, flowers
cream color, "kandu"
unless radicle boils "kandu"
and eaten.
shrub 2 m. tall;
leaves glossy; flowers
white. "ahi"
small tree, flowers bright
orange (not collected).
Wood used, many
enormous sprouting
stumps of pollarded trees. "kami"

1956 Maldive Is.

April 12 - Male Islet

26906. Lemna oligorhiza Kurz
covering surface of water in well in guest house yard, water about 1 in. below surface of ground.

07. Averrhoa bilimbi
commonly ~~called~~ planted around houses

08. ~~Malvi~~: Hagadrachla indica (L.) Jao
planted

1 09. Pedyotis umbellata (L.) Lam
5 common in grassy area on top of old fort.

3 10. ~~Cons.~~ ~~Trees~~: Lawsonia pinnatifida Lam.
1 common in grassy area on top of old fort.

2 11. ~~Legume~~. Indigofera cuneatophylla L.?
1 common in grassy area on top of old fort.

2 12. Cyperus bulbosus Vahl
common in grassy area on top of old fort.

1 13. Mentingia calabura
in crevice in wall of old fort.

1 14. Pilea microphylla
in crevices of walls along st

15. Lawsonia inermis L.
planted in yards

leaves said to be crushed in milk to impart a red color to palms of women's hands.

small tree; flowers on larger branches, very dark red.

spreading tree; flowers white, very fragrant. "hibi".

prostrate; flowers white.

leaves glaucous, rather fleshy; flowers yellow. Used as potherb. "hula fila".

prostrate; flowers bright red.

root, and tubers very fragrant, sometimes used as incense. "gok bulandum".

small shrub. Fruit eaten. "fadu"

fleshy, yellow-green.

small tree 5 m. tall; flowers with petals yellow, odor said to be very good in morning, at midday not especially pleasant.

1956 Maldives

3696: Pandanus maldivensis in St John Rec. Inv. 1961
forming thicket on beach head.

10-12 - [illegible] collection [illegible] sound
[illegible]
[illegible] vegetation
[illegible] collections [illegible]
for sound lights [illegible]
[illegible] wildlife, [illegible] wood, [illegible] and the roots of plants.
The snake was crawling in the house

General observations in Male Atoll:
No remnants of platform seen.
Is beachrock seen.
Beach erosion active in various places, exposing mats of coconut roots and unknown [illegible].
Most reef surfaces covered by sand.
[illegible] reef very wide.

Male Atoll

small tree, 4-5 m. tall, strongly slender with [illegible] leaves [illegible] [illegible] head upland [illegible] [illegible] [illegible] not eaten [illegible] used to [illegible] thing. Tokio

There are several kinds of iguana, including a very fierce looking little monster [illegible]; the common house gecko is present.
No Maldivian name for [illegible], according to informant.

Birds are very scarce.
Rats are common.
"Empis and Luciana flies" grow in sand, the Empis by far the most abundant.
Around islands planted to coconuts there is usually a border vegetation of bushes or a small tree.
Ends of islets tend to have fewer and small coconuts, and much scrub vegetation.

The Maldives

Male is at, proper, the
8000 people.

The economy is at
out of balance but is
improving. The Japanese
boats are being sold.
The exports are
Maldive fish
Coconuts, oil, [illegible]
copra (some dried coconut)
coir fiber
cowrie shells

The principle imports are
rice
flour
sugar
tea
non food items

In 1954 the catch of
Maldive fish was 3477 tons
In 1955 3333 tons

Maldive fish is produced
in all atolls, especially Fadiffolu
It is bonito. The fish
is boiled in water with
a little salt. Then it is
smoked 12 hours or more.
Then dried in sun a week
or more. When ready to bag for
shipping it is sprinkled with sea

The Maldives [illegible]
[illegible] organized
[illegible] to the Maldive
Islands [illegible] from right
to left.
Printing done in Male
is apparently by some
sort of lithographic process

During the 3 days, April 11-13,
the weather was hot, very
much so during the day,
slightly cooler at night
but not cool, and in
absolute dead calm.
This was said to be
rather unusual, even
for this season.

In recent years a
shortage of bait-fish
for catching bonito.

Ceylon

Near the flight from Colombo airport railroad to Bangapore

Coming south of Colombo is mosaic of coconut plantation with trees in regular rows, mixed coconut and palm, neat and beautiful and very productive.

The rice paddies form an intricate land-use pattern following the contours, lines the valley bottoms are flat and checked into individual patches. The land between is rolling, gradually becoming more hilly eastward.

Every few miles as we east the hills get high enough to have alder & second growth and shifting cultivation.

Then a series of rolly and south-sloping rolly forest, some forest, then a mosaic of tea plantations, clearings, and patches of woods. Inland the tea becomes more and more dominant. Then clouds

cut off as we neared the higher mountains we reached.

Then emerge from the clouds west of Adams Peak. They are mostly in tea, with small patches of wood and bushes, bare rock cliffs and apparently hallow, continuous forest in the complex of rugged mountains immediately surrounding Adams Peak.

The lower hills south of this are mostly in tea, with some shifting cultivation and patches of grassland.

Eastward of this the same pattern continues with a few higher hills wooded. The higher mountains southeast of Adams Peak are wooded, then slopes largely tea. South eastward is a basin with small hills covered with tea, patches of thicket, shifting cultivation and some rice in the valleys.

Eastward the higher mountains have more and more grassland in

their slopes wooded near summits and in ravines. Upland plateaus tend to be partly grassy.

The lower country to the south of this is at first an irregular mosaic of wood and clearings with probably some tea. Then, as flatter country is reached, this is generally wooded, rather evenly except for large patches that appear to have been cut over and grown up in dense thickets. Hills here seem to be covered by scrub-forest with rocky outcrops but no grass. Perhaps the large patches are prehistoric tanks reservoirs, as one or two of similar shape have water in them.

Farther eastward the country is very flat. There are patches of shifting cultivation and various stages of regrowth, some obvious old dry tanks. Far to the north the hills and mountains have become more grassy.

Here and there in the flat

country just south of them are what appears be clusters of small grass fields of a tan color.

The forest locally varied by shifting cultivation and small light brown patches, continues eastward.

It becomes thinner and with drier aspect eastward. Terrain generally flat with scattered abrupt small hills. These become few eastward.

Then the forest becomes deciduous in patches in a broad valley near the coast, with green forest on higher ground. Some open areas in this valley looking like marsh. Broad strip of redish tan [illegible] river mouth, coming much narrower northward.

Northward just back of coast a series of small round lagoons. Both of these are with green patches [illegible] in similar position.

Most of country northward is fairly rich - wooded, except for these bright green patches.

1931 East Indies

April 16 – Enroute Colombo to Singapore

At 11 vs (Colombo time) passed over a fair sized island low hilly, appearing largely wooded but with some grassland and clearings in its southern or southwestern parts. Mostly obscured by clouds (Simeulue). ~~East coast of the~~ Northeast coast of this island very irregular and with numerous tiny islets. Many small clearings and patches of grassland near coast, good forest inland. Eastern part or perhaps southeastern with larger grassland areas, as well as with some small areas of mangrove swamp between main island and a ~~small~~ small cate[illegible] directly east.

Sumatra – 11 vs south coast low, wooded – cleared at least relatively thin strip back of the beach and swamps paralleling the beach. The mouth of a large winding muddy river with a hook-like delta and a village with cleared land at its mouth. One branch of the river comes from the south, the other from the west, slightly meandering, another from the east meandering but less so.

The general lowland country is densely forested, but with some clearings and a few villages along the rivers. Some small dark trees meandering in the coastal forest. Clouds more and more frequent inland. Mostly forested as far as can be seen.

Country becomes hilly still forested but with some cleared grassy areas. These mainly seem to be on lower slopes or of valleys.

Thick high cumulus clouds in interior of island, many

thousands of feet high.
Eastward is an high
that seems to be a plateau
or peneplain cut by rivers.
This is largely grassland
with ravines wooded.
South of it wooded hills.
Then more clouds.
Then large open areas
with roads and
villages, some forest
on hills, some bright
green rice in flat valley
bottoms.
Then a gently eastward
sloping plateau going
down toward the coast
mostly grassy, with
small ponds. Cut by
several deep valleys with
flat bottoms, green with
rice. Coast is hilly,
hills coming down
with green flat land
between hills. Many
villages.
Turning slightly followed
coast more closely the same
sort of country continues.
The plateau becomes more
intricately dissected.
Little wood in ravines
having bottoms end in
flat and in rice, though

many have no rice at
land. The plateau
itself is generally
in grass. Eastward
as nearly as can be
seen through the cloud
it ~~[illegible]~~ gradually
loses its identity and
merges into wooded
hills, with patches
of level plateau covered
with grass. Large
irregular patches.
Then clouds, high low
irregular cumulus.

Through occasional
breaks in clouds country
seems hilly, wooded
with, in places, open
ridges, large cleared
areas.
Then rather flat
country partly cleared
with a meandering
very muddy river, winding
and then running westward
to coast where it enters
a broad estuary shared with
another large winding
river from north to south.
The flat lowlands back of
this river mouth are densely
forested except for strips of grass

1956 East Indies Trip

rice along the rivers and their ox-bows.
The general color of the forest is very dark with a very blackish dappled with lighter treetops. Variability rather poor near coast. Some clearing just back of coast.
Small meandering clear reading coast. Very young large amounts of mud in the sea - conspicuous brown patches near mouth of some, entire shallow coast of water, safe in bad weather.
Some of these coastal estuaries drowned with numerous very short lateral branches.
Land mostly wooded, some clearing. Sparsely mangrove along streams but hard to be sure.
No beach alignment along this entire coast, so probably where dark-colored coastal forest may be mangrove.
West end of Lo Ge island presents a band of appearance with at least two wide strips of forest separated by light green strips of about equal width. There could

be outlines like the planned clearings and fallow. Present shaped islet lying close and parallel with the green bands. In the inner green band is regularly settlement. Back of this the island seems to be unbroken forest. Seems essentially flat and without mountains make mostly rather low.
Easterly shore of this island muddy flats and without beaches. Certainly mangroves here. Is small stream discharging a great amount of mud here. Light green area probably mangrove in some sort of swamp just back of shore. Band of stands mangrove actually growing out in shallow offshore water.
Where the mud come from in the small streams on this island is not clear as there is no apparent disturbance of the forest and no large or adjacent bare streams much cutting down

Curved shore – same
island – swings westward
again – same general
pattern but lacking
marshes and wet,
several large estuaries.
Within mainly mud
cleared land – in use
some mangroves? Many
~~mangrove~~ meandering
streams and estuaries
here with considerable
mangrove land as
well as forest between
them. Coastal water
muddy. Mangroves
along coast and estuaries
inland – mud – and
bare in mouths of
estuaries

April 6 – Off coaching
from west along coast
toward Singapore.
The shores at coast
westward exposed mud
have beaches.

Slopes behind the
hanging open – so far
away is a sense of grassland
or planted – back forested
Hills most approach near
a areas of swamp. Inland
covered by clouds.
A number of long wooded
islands – are
more forest eastward
but many large mangrove
cleared areas. Shore
no longer clean. Stream
mouths all muddy.
More forest probably
swamp, and a large
meandering estuary with
a small city on its south
bank, with obvious
industry and with rectangular
water south of it all
along coast. Two main
roads, smaller to coast
a little back from it.
Inland some ugly ecca
series, may be tin mines?
Land is equally cut up.

1950 Malaya

patches and [illegible]
is rocky coast. But
probably rubber.
Coast turns sharply
more eastward. Lined
by a broad belt of mangrove
then backed by plantations,
judging by orderly extent
pattern, probably rubber
extending inland as far
as we could tell goes. Much
of this however could be
forest, in large or rather
tracts. Some low low wooded
hills inland. Another
large estuary with city
east of it. Much open
land apparently grassy
inland from city, some
wooded hills, then plantations.
This is north side of Malacca
Strait, on mainland.
Much apparently grassy
land here interspersed
with large and small
often regular wooded
patches or patches of cultivation.
Then large area of plantation
land with a straight canal
running east and west, ending
eastward at a small crooked
stream. Low wooded hills
in plantations just to north.
Then some more land eastward,

forest, with some
cleared areas, especially
northward, apparently
grassland.
As plane turns southward
country becomes partly
cleared, partly wooded
in rather large patches.
Clearing becoming more
abundant.
Then wooded hills with
large reservoir. Then
large areas of plantation
and large red or green
cleared areas. Then mostly
plantation, with some
clearings.
Then extension of city
in Johore ~~Bagdas~~ Strait is
approached. Singapore
island very much cut up
into clearings, small
and large patches of rubber
for, grassland, patches
of building and houses.
Roofs bright red.
City on far side of island.
Parts of it have trees
but few downtown, in
slummy crowded areas of
small houses or in areas
of new apartment buildings.
Much shipping in harbor.

April 7 Bukit Timah [illegible]
[illegible]
[illegible] 1933
Undrained primary [illegible]

Forest extending [illegible] in corners

[illegible] of second [illegible]
[illegible] of [illegible] 2 - 12 in. [illegible]
Rattan [illegible] 7.6 a pound
again, [illegible] most [illegible] rattans scattered in the ~~tree~~ layer, most [illegible] zona, some very large
C. T. large [illegible]
but T. [illegible] 9 [illegible]
no humus layer
Ferns [illegible] rare
except a [illegible]
Bord of second layer [illegible]
[illegible] Dicranopteris longipinna. [illegible]
[illegible] of [illegible] also found
[illegible]
[illegible] round [illegible]
[illegible]
[illegible]
[illegible] has [illegible] [illegible]
clear [illegible]
[illegible]

[illegible]

The [illegible] is a [illegible]
[illegible]

[illegible] dist[illegible] but not
[illegible] contiguous [illegible]
[illegible]. The second layer not
continuous either but
together they in most
places cover the ground
almost completely.

Epiphytes and creepers
common but not abundant.
Ferns abundant along
trails, in thin places, etc.

Large area of mixed fresh[illegible]
swamp, secondary forest
and [illegible] with [illegible]
large trees around reservoir
forming water catchment [illegible]
Fire nearly 400 acres, a part
of nature reserve.

[Corner may have an
unpublished description a
phytosociological study
[illegible] land]

950 Malaya

April 17 – Singapore

30/1/7 Emilia
Bare ground near balanced pade

16 Dipterocarpus [illegible] sp. [illegible]
Fleuchenia
open hillside below
Bukit Timah forest

P. borsi Gaud. acc. St John Proc. Sci. 11 18, 14

17 Pandanus tectorius
edge of the mangrove
swamp

The dry mangrove is a tidal swamp but is evidently dry for a very much of the time. A jungle of Rhizophoras, Pandanus (and a sp. [illegible] P. [illegible]), Bruguiera, [illegible] Avicennia, Excoecaria, Podocarpus !), etc.

Unfortunately big highway construction, including [illegible] a curve in the highway, has all but eliminated the only known [illegible] of Pandanus conoideus, curious species with a crested fruit – a broad leaf tip, very low habit and small fruit

[illegible] flowers pale, fruiting heads, [illegible] to [illegible]

forming tangles.

small tree, fruiting head small cylindric, red when ripe.

The low lying land near the airport is occupied by vegetable gardens and dwellings, many coconut groves.

Low hills of red soil have some rubber plantations but many of these are in very poor condition. A good deal of this land is abandoned and covered by Gleichenia linearis, Imperata cylindrica and bushes.

A few patches are planted to pepper (Piper nigrum) climbing on stakes.

Some fish ponds in flat land near airport. Some small mangrove along straits of Johore.

1956 Malaya

April 12 – Flight from Singapore to Malacca. Starboard side of plane

Along Strait of Johore, on Johore side, low lying land is in mangrove, slightly higher areas in coconuts and some in rubber.
On Singapore Island mangrove along an estuary going up toward water reserve. Water catchment area solidly wooded. Around it many hills with Gleichenia, a few cultivated patches, some dwellings, several [illegible] bright red erosion scars. Between these and the Strait of Johore are [illegible] plantations [illegible] [illegible].
General pattern outside built-up areas is that hills are mostly bare with Gleichenia and brush, more level land in rubber, low areas along strait in mangrove.
North part of Johore across from Singapore and Strait of Malacca the low flat land is in mangrove. Most of the low hills appear to be in rubber, a few areas in pines. along

A large estuary just west is surrounded by an extensive swamp or flat.
North of this an area of what appears to be pineapple plantations, perhaps several hundred acres, with a few patches of rubber scattered in it. Some forest just west of this but mostly rubber. The rubber plantations have a dull olive-green appearance from the air. Difficult to be sure whether rubber or forest. Both westward and northward toward the coast are some areas of coconuts mixed with the rubber plantations. I saw several patches of forest, in former woods, partly logged and burned. Then a large area of solid coconut plantation along coast and for some distance in, but with what seem to be patches of swamp back of the coast. Coconut plantations show pattern of parallel rows. The coconuts extend for some miles, with the belt of swamp just back of an immediate coastal strip of [illegible]. This swamp seems to be in

[illegible]

[illegible] patches of mangrove and villages.

[illegible] with some [illegible] on. Then a small [illegible] with narrow [illegible] clad in forest. This may be [illegible] the [illegible] and [illegible] irregular the [illegible] for [illegible].

Approaching [illegible] which has a wide mangrove [illegible] bordered by [illegible] forest or swamp. Then a wide [illegible] with [illegible] forest [illegible] the [illegible] and [illegible] a [illegible]

[illegible] and [illegible] becoming [illegible] more [illegible] again a [illegible] margin. The patches of [illegible] and [illegible] by become more [illegible] and [illegible] for a [illegible] "swamp" land.

[illegible] goes out [illegible] [illegible] of [illegible] water, [illegible] [illegible] that [illegible] this

The [illegible] of a [illegible] [illegible]. [illegible] [illegible] sandy beach at [illegible] [illegible] and [illegible].

Coast of [illegible] this [illegible] a [illegible] [illegible] a narrow [illegible] a [illegible]. The [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Then, northwards [illegible] seems to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] conspicuous, [illegible]. Then large area of mangrove and nipa swamps near [illegible].

125. Malaya

[illegible] of Malacca west of the lowlands in rice, but patches of coconuts, mostly rubber small [illegible] east coast [illegible] mainly [illegible]

The inland below [illegible] are covered [illegible] [illegible] feet [illegible]

swamp forest and [illegible] from [illegible] [illegible] some [illegible] [illegible] Malaya [illegible] alt.

— flag — Malacca to Kuala Lumpur

nland is a mosaic of rice, rubber, small patches of coconuts, a few small forests, a few bare fields, with rubber becoming completely dominant inland. The open fields are apparently [illegible] and in rubber plantations here [illegible] bare areas of low hills.

Northward, small areas of [illegible] following valley bottoms form patches of forest. Bare fellow [illegible] of mountains form areas of dark close wooded vegetation — not clear what it is.

Northward, forest areas more extensive in low hills.

Open areas conspicuously cultivated occasional, also recently cleared patches of forest. Mostly rubber of various ages. Lowland flats along a winding river that may be in workings — partly revegetated.

[illegible] plains on east side [illegible] densely wooded.

Northward west side, still mostly rubber, some [illegible] cultivated fields near [illegible] cultivation?) and [illegible] open grassy areas — belang? Some forest on hills. A few areas of rubber? revegetated defoliated.

Low mountains with good [illegible] and a few small patches of forest.

Northward a most [illegible] [illegible] large [illegible] hills. More [illegible] a clear northward.

Darker colored [illegible] [illegible] [illegible] — [illegible] height or something — not clear what it is.

Then a [illegible] extensive in workings — [illegible] gravel [illegible], pits, tunnels, housing areas with [illegible] around [illegible]

Malaya

hilly wooded country
grass and fern cover.
Thin growth of young
bamboo and scattered
fern dominated by
wood ferns. Lots fairly
evergreen

April 12 / Malacca
26710 Emilia sonchifolia
weed around airport.

April 19 - Bukit Brang
above Kepong ~~[illegible]~~ Kuala Lumpur
to Langat

3 41 Engelsonia
abundant in undergrowth
of hill dipterocarp forest,
especially on ridges. Often
said to inhibit growth of seedling
of other species

1 42 Eberea curtisii
~~[illegible]~~ common in hill
dipterocarp forest

3 43 Mace
common in second growth forest

3 44 Stilo
common in lalang second growth

flowers light purple
scarcely exceeding
involucre.

800 acaulescent, caespitose;
2510 leaves ascending to erect
distally arching. petioles
spiny, especially to in lower
part. Blade perhaps
twice as long, entire leaf
up to 5 m. long; inflorescence
erect, pedicellate, in center
of plant, up to 2.5 m. tall,
~~[illegible]~~ peduncle to 1.5 m. naked
at time of fruiting; fruit isolated.

600 common forest tree; leaves
3910 tending to be grayish

600' small tree in tangled
1910 undergrowth, inflorescence pendent.
small tree, does not sting.

Ap. 2 - Bukit [illegible] just above intake of Kepong water system, [illegible] the ridge.

The approach to the intake, along the pipe-line from the reservoir is through "belukar" or tangled second growth that appears after clearing. This is a dense rather low wood of Macaranga, Mallotus, [illegible], Ficus, [illegible], a few [illegible], Artocarpus scortechinii, etc. These are tangled with quantities of vines, including Mikania scandens.

Occasional old primary forest trees may have been left, scattered here and there. Their tall branchless trunks and umbrella-like crowns suggest their origin in the ~~[illegible]~~ primary forest. Trees of some wood ~~[illegible]~~ species of Shorea may come in ~~[illegible]~~ while the ground is [illegible] enough for them to ~~persist~~ establish themselves ~~persist~~. ~~[illegible]~~ They are then able to grow fast enough to be able to overtop the Macaranga

Mallotus, etc. of the ~~of~~ Belukar. If there are enough of them the Belukar may give way to something resembling primary forest.

The actual ridge itself, has not been cleared off, but has had some hardwood taken out 40-50 years ago. Most of the dipterocarps were left and many very large trees are scattered all along the ridge as emergents from the main canopy layer. These are trunks to ~~[illegible]~~ 1 m - 1.5 m. dbh., perhaps some more.

The lower part of the ridge was partially logged off 30 years ago. There are some scattered really large buttressed trees. A fair canopy is at about ~~[illegible]~~ 30 m., of light requiring trees about 3-4 dm. dbh. An indistinct lower layer at 6-10 m. Ferns and shrubs fairly common, and

1956 Malaya

many climbers and, become more abundant as one descends.

On the ridge top or the lower part the forest is rather poor and open forest, though with some large trees. An acaulescent caespitose palm, Eugeissonia with the habit of Nypa, and very spiny pelidera is abundant along the ridge and to a lesser extent on the slopes below. In places it reaches 5-6 or even more m. tall. Makes up half or more of the shrub layer in most places, and almost all of it in the sparse areas on the lower ridge top. Here in some areas the upper story trees do not even approach each other but usually they are closer. Landowners say that the sparseness is probably due to the presence of the palm the litter of which may have a deleterious effect on the soil, as they find it difficult to get trees started artificially in soil under these palms.

The first flora outlier is at about ~~[illegible]~~ 350 m. which indicates by mington "hill dipterocarp forest". It is fairly common from here up to 500 m. (and probably further up)

The ridge ascends gradually and has generally a rather wide top 50-75 m. or more, in places narrower.

Above the sparse part that was somewhat logged the hill dipterocarp forest becomes rather good. The ~~co~~ main canopy is fairly ~~good~~ complete at about ~~[illegible]~~ 30-40 m. with emergents up to ~~[illegible]~~ 50 m. and eventaller. The larger trees are up to 1.5 m. dbh or more. Spacing of canopy trees is from 10 to 20 m. There is an uneven lower story 10-20 m. high, rather well marked, in places. The shrub layer is mostly Eugeissonia, but with some other shrubs. On the ground there is, where the Eugeissonia is not too thick, a good abundance of seedlings of shorea.

These vary in size from those of this year ~~10 cm~~ a ~~ss~~ cm to older ones to 0.5 m. These latter, corresponding to places where more than usual light gets in. The seedlings according to Langdon can live for up to 5 years in a semi dormant condition, shooting up if a tree falls and the in light.

The holes made in the forest by fallen trees are very impressive. One such must have been 30-50 m. long and 15-20 m wide. Trees are said to fall even on very still days such as today. One was heard at a distance. The holes persist for a long time if no seedlings are present to fill them. Langdon says there may be a good seed year every 2-4 years

The trees making up the emergent and main canopy layer belong mainly to the following genera:

Shorea
Dipterocarpus
Koompassia
Anisoptera
Hopea
Mallotetalum (allied sen. 1 m.)
Campnosperma
Sindora
Pluta
Melanolepis
Lophopetalum
Falaquium
Dyera (Jelutong)

Main story, not emergent:

Eugenia
Pilenia
Calophyllum
Myristica
Canarium
Tapiria
Landolphytum
Lauraceae (over 100 sp.)
Endosperm

One tree of Agathis alba at about ~~400~~ 350 m. first one seen in this region at such a low elevation

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On the slope (25-30°) below the 1000 point on the ridge is a plot laid out in 1918 by Gagatbrant for detailed study of a virgin rainforest. In this same every tree over 4 is numbered, plotted on a diagram, measured every two years, and details of flowering, etc. The land divides into chains 20 m. long and area worked out for each of them. Found that maximum basal area seems to be about 180-200 sq. ft. per acre. Growth is rapid up to this then slows down & stops till at 250 sq. ft. This is figured to be the maximum the soil can support.

The average number of trees per acre is about 200. The average number of species is about 100 per acre. In the 5 acres there are about 200 species. This does not include trees under 4" diameter.

In this plot the trees are generally smaller than on the ridge. Lauraceae are usually smaller on the slope than either on the ridge or in valley bottoms.

The ground layer has a few ferns and Selaginella, a few seedlings.

The shrub layer has Eugeissonia common but not nearly so common as on ridge. There also is a sparse stand of slender shrubs of other sorts. This layer from 1-3 m. high. The large trees are spaced about 10-20 m. apart, but few are over 6 dm. dbh. Here and there are rather closely spaced groups of larger trees. The main canopy is at about 30-35 m., is rather open and uneven, and is of mostly trees about 3 dm. dbh.

Between the shrub layer and this is a rather vague layer or underlay between 10 and 20 m., rather dense but gradients main canopy.

There are some enormous lianas but they are not abundant. Some small rattans. There are rather few epiphytes.

It is easy enough to walk through without cutting, being only careful

of Spring-vetters and Engelmannia detrola.
Considerable light comes through in most places.

In general in this hill dipterocarp forest the canopy is rather loose, so layering is not very definite or easily made out, there are about 5-15 big trees per acre. The foresters hope to have 25-30 in next generation

April 19 — insects in bottle #2 collected among lights at Forest Research Institute rest house, Kepong, near Kuala Lumpur.